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AS an example of an effective and aggressive organization the Traveling Engineers' Association may well be taken as a model by other organizations. The papers to be presented were carefully and thoroughly prepared by the various committees and were forwarded to the secretary in time to have the necessary cuts made and the papers distributed to the members in pamphlet form well in advance of the meeting. Sharp at the time advertised for the opening of the convention every officer was in his place ready for business; a few moments' delay was caused by the preacher and the mayor being unavoidably detained. The convention waited for the preacher, but not for the mayor, and when the latter finally arrived the proceedings were well under way. There was something doing every minute. If it was necessary to delay the regular course of business to count ballots, or for other causes, the president always had some special business to occupy the attention of the convention until the tellers were ready to report. Due to the unfortunate location of the convention hall the noise of passing street cars and trucks proved most annoying, but by good generalship the president reduced the annoyance to a minimum by insisting that speakers at the back or side of the room step forward and face the audience. The subjects chosen for discussion all related to improved efficiency and greater economy, appealing strongly to the members who entered into the discussions enthusiastically and heartily. The membership has been increased to almost 800 and the attendance at the convention was very large. Such results could only be brought about by good work—and lots of it—on the part of the officers and executive committee, with hearty co-operation from all the members. An applicant who applied to the secretary for membership was told frankly that "if he became a member he would be expected to get busy and work hard for the good of the association," and it is quite evident that the members generally feel that their responsibilities do not end with the payment of their dues or attendance at the conventions.

THE safety appliances law, enacted by Congress at its recent session, requires the Interstate Commerce Commission within six months after its passage to prescribe the standards for the various safety appliances to be used on railway equipment, and makes it unlawful after July 1, 1911, for any carrier to haul any car not equipped with the appliances that the commission shall prescribe. The act was passed on April 14. The period within which the commission must prescribe the standards will, therefore, expire on October 14. Before it can act it must hold public hearings. Four of the six months allowed it were gone when, on August 10 the commission issued its suggested standards, and announced that on September 29 it would hold a hearing regarding them. The delay does not reflect on the commission. It is doing the best it can. The trouble is with the law, which gives much too short a time in which to determine what changes in appliances, if any, are desirable. Fortunately, the act provides that the commission may, upon full hearing and for good cause, extend beyond July 1, 1911, the period within which carriers may comply with its orders; but this provision applies only to "cars actually in service on the date of the passage of this act. In other words, the commission may after July 1, 1911, let a carrier haul a car not equipped with the standards prescribed by it if the car was built before April 14, 1910. But any car built after that date which is not equipped with such appliances as may be prescribed by the commission cannot be used after July 1, 1911. Many cars have already been built since April 14, 1910. As the commission as yet has not definitely prescribed any standards, it is necessary to equip them with the safety appliances now in use. Appliances which do not meet with the approval of the commission will have to be removed from all these new cars and others substituted before they can be used after July 1, 1911. It is hardly necessary to say anything more to show how short-sightedly and arbitrarily Congress acted in framing the act. But the commission is more familiar with the practical conditions with which railway managements have to deal, and, no doubt, it will co-operate with them in holding down to the practicable minimum the unnecessary trouble and expense which the legislation in question may cause.

IN his presidential address before the Master Mechanics' association last June, G. W. Wildin said: "It is also quite necessary that we as an association be more of a unanimous mind on questions that are likely to call for or be made the subject of either federal or state legislation." This cannot be too strongly emphasized in connection with the hearing on the proposed safety appliance standards before the Interstate Commerce Commission on September 29. A committee of the Master Car

Builders' Association, under the leadership of the president, T. H. Curtis, has spent considerable time in preliminary conferences with the commission. In order that the railways may act as a unit in presenting their case before the commission, it is suggested that all criticisms or suggestions concerning the proposed standards be sent to T. H. Curtis, superintendent of machinery, Louisville & Nashville, Louisville, Ky. The committee of which Mr. Curtis is chairman is a large and representative one and thoroughly capable of looking after the best interests of the railways. It includes among its members F. W. Brazier, superintendent of rolling stock, New York Central & Hudson River; C. E. Fuller, superintendent motive power and machinery, Union Pacific; G. W. Wildin, mechanical superintendent, New York, New Haven & Hartford; M. K. Barnum, general superintendent of motive power, Illinois Central; Henry Bartlett, general superintendent mechanical department, Boston & Maine; C. B. Young, mechanical engineer, Chicago, Burlington & Quincy; A. W. Gibbs, general superintendent motive power, Pennsylvania Railroad; A. La Mar, Pennsylvania Lines West of Pittsburgh; T. M. Ramsdell, master car builder, Chesapeake & Ohio; J. D. Harris, general superintendent motive power, Baltimore & Ohio; R. E. Smith, general superintendent motive power, Atlantic Coast Line, and W. O. Thompson, master car builder, New York Central & Hudson River. The proposed standards call for double the number of ladders, handholds and sill steps required by the M. C. B. standards, in this respect agreeing with the requirements of the Canadian law. While it is not specifically stated that the law is not to be retroactive, it would appear that the commission in drawing up the new standards intended them for new equipment only. If it is intended to make the law retroactive, it will be necessary to provide for considerable latitude in the proposed standards or the railways will be forced to an immense and largely unnecessary expense. Some idea of the changes which will be required may be gained by looking over the proposed standards for box cars, which appear in another part of this issue. If the commission decides to make the law retroactive, think of the unnecessary expense of conforming to the one small item of replacing all welded brake staffs. To change the present equipment to conform to the proposed standards would not only involve an expenditure of many millions of dollars, but would tie up a lot of equipment and cause a congestion of traffic, unless the time allowed for making the change was a matter of several years. It is rather difficult to understand just what is meant by the following clause, which appears under uncoupling levers for hopper cars and high side gondolas with fixed ends: "While cars are in motion, trainmen shall not be required to pass over the tops of box and other house cars, high side gondolas, hopper cars and rack cars unless such cars are equipped with running boards, or other safe means of going over the car."

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A "PRESS NOTICE" which has been going the rounds says that President Willard, of the Baltimore & Ohio, is planning to give the public "the very best service that enterprise * * * can provide." The notice says, in part:

"Daniel Willard since he became president of the Baltimore & Ohio has given orders for new equipment of the latest design, including electric lighted and vestibuled coaches. In addition to this mark of a progressive spirit a number of inspectors have been appointed who report to Vice-President Potter, as to the general neatness of station properties and the general appearance of tracks. Agents have instructions to keep their buildings in good order, and these are put in a condition of attractiveness. That this may be extended to the right of way, trackmen and others are required to burn waste paper thrown from passenger trains, and porters of trains to collect such material constantly and deposit in receptacles provided for that purpose."

The policy outlined is particularly commendable in two features: the employment of inspectors who report over the heads of the superintendents and the attention given to stations. We have nothing in particular against the Baltimore & Ohio superintendents; the best superintendents in the world should have their efficiency thus tested. Like bank cashiers, they will "bear watching." All good men will. Attention to the conditions of stations by a railway manager should always receive special commendation for the reason that passenger cars are everywhere receiving more than their share of money and attention. Where is the road that has stations which come anywhere near matching its cars (including parlor and sleeping cars) in cleanliness, comfort and freedom from offensive features? It would be very interesting to see the results, month by month, of this order to keep stations "in a condition of attractiveness." To succeed in this the inspectors will have to be very wide awake, indeed, judging by the countless failures in this matter that are observable on railways generally. So far as appears from this item the main purpose on the B. & O. is to make things attractive to the eye. The station agent usually needs a good deal of encouragement or prodding from outside of his own "inner consciousness" to do even this, for his best efforts are in part neutralized by features of unattractiveness that it is not within his power to cure, and he often fails to put forth his best efforts because he is overworked; but it is the offense to the nostrils that contributes the really tough problem of most railway superintendents in connection with their stations. It would be safe to offer a large premium to every person who has traveled any considerable distance during the past two months and who has not encountered foul smells, as well as foul sights, in at least four-fifths of the railway-station toilet rooms that he has had occasion to notice. And this applies not alone to country stations, housed in miniature structures erected in the early Byzantine age, but to some of the most pretentious modern structures. Charles Paine wrote words of wisdom on this subject twenty-six years ago,* but the places where 1910 shows an improvement over 1884 are so numerous that we must confess that we have never half done our duty in advertising Mr. Paine's book!

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"ONLY energy on the part of the agent," says Mr. Paine, is necessary to secure neatness at those places in stations where neatness is usually most lacking; but that is a big *if*. In such an unpleasant task it is in most cases necessary to adopt the principle so commonly employed in other unpleasant tasks, the principle of acting by proxy. A superintendent who has to discharge an employee does not go in person; he sends a blue envelope. A judge who has to punish a prisoner deputes the sheriff or a policeman to carry out his will. And the principle applies in weightier matters. Often, a court is unable to do just the right thing in a suit, and a change of venue is ordered. Unpleasant enforcement of unpleasant laws oftentimes is done efficiently by federal courts and federal officers when state courts fail; because the federal officers are distant, physically and figuratively. The janitor of a station (who at a very small station is the agent himself) needs to be ruled, in disagreeable duties, by someone who is distant enough to be cold and unsympathetic. As we have said, there are many filthy rooms in large city stations; but it is at the small stations that the problem is most baffling. We hesitate to preach, for the experience of the past seems to indicate that this nuisance, like the poor, may be always with us; but it is probably safe to say that fifty or a hundred men, such as are usually entrusted with small stations, will never be successfully educated to maintain uniformly decent conditions in this difficult matter. This being so, the superintendent having fifty or a hundred stations will have to cease depending on education and adopt an ironclad rule; and use something like force, regularly and frequently, to get the rule carried out. Failing in this, he may expect to be execrated by hundreds of passengers every summer. One trouble at the small stations is the small number of passengers and the large number of undesirable citizens—trespassers on the station premises, really. In this situation the toilet rooms ought to be kept locked. But if they are locked, then comes another difficulty. The general manager of a road in Louisiana received recently the following:

"We, residents of Covington, respectfully request that you make such changes in the depot at this place as to make it equal to the best on your line in point of sanitary convenience and comfort for women and children.

*See extracts in another column.

These changes have long been needed. At the present time ladies with children are forced to apply to the ticket window for the key to the toilet, which is located across the street in the rear of a private residence. The lack of water is also noticeable. . . ."

The purpose of the locking is obvious, and the course of the agent is commendable; still he finds it difficult, no doubt, to do just the right thing. But there must be some solution which will keep the peace with the public; and we can only say to this general manager that we will join him in his prayers that he may find the solution before the people shall have taken their grievance to the State Railway Commission. For railway commissions nowadays deal with matters even very much smaller than this one, and there is no telling what absurd or costly provision might be required.

## MANAGERS, SUPERINTENDENTS AND DESPATCHERS.

THE despatcher whose letter was printed in our issue of August 12, page 274, wherein he told his experiences, his hopes and his fears, was too diffident. In the first part of his article, in words which show that he is describing the experience of despatchers in actual life, he tells how the average superintendent fails to appreciate the despatcher. Probably from pure modesty and disinclination to offend his superiors, he omits to mention what in many cases is the real cause of this failure to appreciate useful and important men. It is the neglect of the general manager. The general manager should always select for the position of superintendent not only a man who is acquainted with the road and the men, and who has succeeded in making a minimum of mistakes during his service with the company, but a man who has a broad mind and a big heart. This statement of a very simple principle cannot be repeated too frequently, for the principle is very frequently neglected. The modesty of this despatcher and of other railway men in telling their experience keeps back the plain statement of an important truth. One of the greatest needs of the American railway world today is that kind of general manager who will take as much care in selecting strong men to fill the position of superintendent as he does in keeping down his percentage of expenses to receipts. There is much truth in the declaration that the superintendent is the most important man on the road.

In the closing paragraphs of his article, our friend the despatcher wonders why the chief despatcher is so lightly considered. This is the other complaint stated differently. We may also state the explanation in another aspect. While, as before intimated, the man appointed superintendent often proves not big enough for his job, he knows enough to appreciate those despatchers who are exceptionally good, even if he be of small size; but if our friend will make a careful study of the situation, he will find that "exceptionally good" applies only to a very few of his fellow despatchers. To get into this class the despatcher must know how to run an engine, or a train, almost as well as does the engineman or the conductor. To have "a pretty good idea of how it should be done" is not sufficient. The superintendent is likely to value most of his despatchers lightly because he knows that they were brought up in a telegraph office and not in the outdoor work of the road. It may be said that this feeling is mere prejudice; that the telegrapher can learn all that is necessary in spite of his having had no experience in train or yard work; but this is not quite true. The actual experience does count for something.

It must be borne in mind that the superintendent's attitude towards the despatchers necessarily is largely based on the quality of the *average* despatcher. An officer is partly excusable if he fails sometimes to distinguish between the good despatchers and the second best. And it must be admitted that on most roads a considerable percentage belong to the latter class.

Competition for employment is too strenuous nowadays for any but the best men to succeed in the race for the best places; and despatchers, like the rest of us, will have to perfect themselves by hard work and study if they expect to rise on their merits. As long as men do not study and broaden themselves the officer who promotes is left in the dark. He picks the best men he can find, but his estimate of what qualities constitute "best" may be distorted by the impossibility of making just and satisfactory comparisons between a lot of men all of whom have numerous faults. While despatchers (and men of other classes) are feeling that their talents are ignored, superintendents are privately nursing another grievance; the feeling that they have a hard fate in not having a better body of men to select from. Can the fault be wholly on one side?

## NEED FOR WIDER DIFFUSION OF RAILWAY SECURITIES.

THE managements of the railways of the United States have lost in recent years every important fight that they have had with the shippers. In most cases their defeat has not been mainly because they have not fought a good fight. There has been much to criticize in their tactics of defense and offense; but probably if any other large industry—the manufacturing, for example—had been similarly attacked and had conducted its operations with as much strategic skill it would have won. The main reason why the roads have usually lost is that Mr. General Public has been the referee, and that his decisions have unfairly favored the shippers. The referee perhaps has not been intentionally unfair. The trouble has been that he has had a strong, but perhaps in the main unconscious, bias in favor of the shippers; and this has been due to the fact that he has felt that it is more to his interest that the shippers should win than that the railways should win.

The attitude of the public toward the railways and other public service corporations is clearly reflected in our legislation. We have many laws, state and national, designed and administered to influence the amount of profits earned in business. The aim of all these laws, except those affecting public service corporations, is to increase profits. The purpose of the enactment and administration of most of the laws regulating public service corporations seems to be to reduce and keep down profits. Now, the profits earned by public service corporations add to the total profits derived from industry in general exactly as do those from manufacturing, merchandising or farming. Their recipients do not spend their incomes differently from investors in factories, stores and farms. Why, then, should the attitude of the public be favorable to the increase of profits in other lines of business to the practicable maximum and, seemingly, favorable to the reduction of the profits of public service corporations to the minimum constitutionally permissible?

No doubt there are several reasons. But beyond serious question, one of the main reasons why the public assumes so different an attitude toward railways from that it assumes toward other industries is that in every community there are many people who feel that it is directly to their interests for farming, manufacturing, etc., to be carried on profitably, while in few communities are there many who feel that they have any direct interest in railways being operated very profitably. This is due to the fact that in every community there are numerous persons who own farms, small or large factories and small or large stores. Every one of them is keenly alive to the effect that legislation regarding manufacturing, storekeeping or farming would have on him, and, knowing how such legislation would affect him, he is able to appreciate how it would affect others in the same line of business. On the other hand, the ownership of American railways is concentrated in the hands of persons whose number, while absolutely large, is small compared with the number interested in other important lines of industry. Furthermore, most of the owners of railway securities live in cities, in the east and in Europe. Go out on almost any road in the central states, in the south, or in the west, and how many individual owners of its stocks and bonds will you find in the various communities along its lines? There are railway employees in every town and city. Their aggregate number is large. But most of them are oblivious to the fact that if the roads are to continue to exist, to be successfully operated

and to be able to pay high wages it is essential that they shall be able to earn profits as substantial in proportion as those earned in other businesses. Educational work which is now being done among employees will, no doubt, in due time, cause many of them to perceive more clearly the extent to which their interests are identical with those of railway owners; but the wage earner, as such, will never feel anything like the same keen interest in the amount of profits that his employer earns as he does in the amount of wages that his employer pays him. The result is that we have a public sentiment in most of the country that regards the railways as a sort of an alien institution which may and should be treated differently from other industries—which should be given what the strict letter of the law requires it to be allowed, but not one cent more.

It is open to very serious question whether the time will ever come when the people will look with as favorable an eye on large profits in the railway business as they do on large profits in other lines of industry, until more of the people directly participate in railway profits. Honest, able, candid railway management can do much; educational work can do much; and disastrous results flowing from unwise regulation can do much to create a sentiment more favorable to the railways. But they probably cannot do all that is needed. The employee will become as much interested in railway profits as he is in his pay envelope only when he becomes a stockholder and shares directly in the profits. The farmer, the banker, the editor, the clerk, in the various communities of the country, will become an advocate and defender of large railway profits only when he becomes a railway stockholder and knows that the amount of his yearly income will to some extent depend directly on what the railways earn.

Is there any way by which a wider diffusion of the ownership of railway securities can be obtained? We believe there is. The United States Steel Corporation and other industrial concerns are successfully carrying out profit-sharing schemes. Why could not the railways in some similar way induce investment in their securities by their employees, who are the best paid wage earners in the world? In every community on every railway there is every year more or less money seeking investment. The agricultural communities have for some years been especially prosperous. What insurmountable obstacle would the railways encounter if they made a serious effort to get the farmers, the merchants, the manufacturers and other business men along their lines to buy their bonds and stocks, provided they were issued in small enough denominations to make investment in them by persons of moderate fortunes practicable? The subject seems of sufficient importance to justify serious study and action by every railway management in the country.

## BROOKLYN RAPID TRANSIT.

It is doubtful whether there is another road in the country, steam or electric, of any considerable size, that finished the fiscal year ended June 30, 1910, with as clean a showing in the claims and damage department as the Brooklyn Rapid Transit. Barring slightly over $25,000 in judgments on appeal, there is no outstanding judgment against any company in the system. Legal expenses and damages cost the B. R. T. $1,129,396 in 1909 and but $921,536 in 1910, a reduction of more than 18 per cent. These results are due to the policy of making prompt investigation and settlement of all claims, which policy the present management has pursued with increasing success. The item of legal expenses and damages is not a small one in itself, and the saving last year was considerable as a gross sum; but of great importance also is this indication of the general attitude of the present management towards claims of the public. One of the greatest difficulties that the company has had to overcome has been the hostile attitude of the public using its lines, and every sign of success in this direction is of especial interest.

In 1910, total earnings from operation of the Brooklyn Rapid Transit amounted to $20,900,000, comparing with $19,700,000 total earnings in 1909. After the payment of operating expenses, taxes, interest and rentals, and after setting aside for special appropriations $109,000 in 1910 and $65,000 in 1909, the company had a surplus available for dividends of $2,500,000 in 1910 and of $1,870,000 in 1909. Last year dividends at the rate of 5 per cent. were paid, calling for $1,900,000. The year before $897,000 was paid in dividends.

The increased earnings came from larger gross business, the passenger revenue car mileage showing an increase over the preceding year of 3,784,215 miles, the average number of passengers per car mile being 7.30 in 1910 and 7.14 in 1909. The total number of passengers carried was 569,438,773 in 1910 and 530,149,597 in 1909. This is an increase of 7.41 per cent. in 1910 over 1909, as compared with an increase of 2.93 per cent. in 1909 over 1908. The increase in earnings was about evenly divided between the surface division and the elevated division. The earnings from the surface division last year amounted to $12,346,325, and the year before to $11,645,569. The earnings from the elevated division amounted to $8,130,820 in 1910 and to $7,413,124 in 1909.

Operating expenses as a whole amounted to $11,726,392 in 1910 and to $11,394,655 in 1909. The noticeable economies came in the legal expenses previously mentioned and in the operation of the power plant. The saving was made in this later department through the installation of more modern machinery. There was also a relatively large saving in operation of cars. With the greatly increased business handled, the operation of cars cost $5,061,150 in 1910, an increase of but 5 per cent. over 1909. Economies in this department were due to the innumerable little savings in operating costs that, while actually small in themselves, when taken as a whole make the difference between successful and unsuccessful operation of a street railway system. It is in such little things as the saving effected by the enforcement of strict rules in regard to turning off lights on cars standing in car barns, turning off water faucets, and so on, that a street railway operating under such conditions as the Brooklyn Rapid Transit can hope to earn a return on the capital invested.

As in 1909, there were comparatively small expenditures for new construction last year. In 1910 $1,181,277 was spent, comparing with $1,970,858 in 1909 and with $6,476,959 in 1908. The B. R. T. is now interested not so much in extending its lines into new territory or in developing new suburban districts as in developing the city of Brooklyn itself. Its province seems to be to leave the development of what really amounts to an interurban service to other companies. The B. R. T. would like to run its lines over the new bridges to Manhattan, and has made proposals to the New York Public Service Commission for this privilege, but no agreement has been reached. The opening of the Interborough subway through to Flatbush avenue has helped to build up Brooklyn and has in this respect been an auxiliary to the B. R. T. as well as a competitor.

The B. R. T. did not sell any bonds last year, for the first time in eight years, but the balance sheet shows bills payable on June 30, 1910, amounting to $4,500,000. This is an increase over the bills payable in 1909 of $1,100,000, and taken in connection with the fact that current liabilities amounted in 1910 to $8,043,918, with current assets of $3,151,835, seems to indicate plainly that the Brooklyn Rapid Transit will be in the market to sell bonds as soon as conditions make a successful sale at all probable. The company has in its treasury $15,203,000 first refunding mortgage 4 per cent. bonds.

The following table shows the operations of the company in 1910 and 1909:

| | 1910. | 1909. |
|---|---|---|
| Surface first track mileage | 238 | 235 |
| Elevated first track mileage | 32.6 | 32.6 |
| Passenger earnings | $20,477,145 | $19,058,693 |
| Total operating revenue | 20,906,930 | 19,694,462 |
| Maintenance of way | 1,309,719 | 1,194,014 |
| Maintenance of equipment | 2,068,271 | 1,690,916 |
| Operation of power plant | 1,498,712 | 1,596,759 |
| Operation of cars | 5,061,150 | 4,812,556 |
| Damages and legal expenses | 921,538 | 1,129,396 |
| Total operating expenses | 11,726,392 | 11,394,655 |
| Net income | 2,611,595 | 1,936,609 |
| Special appropriations | 108,560 | 65,430 |
| Dividends | 1,906,287 | 897,076 |
| Surplus | 1,797,727 | 831,646 |

### BUFFALO, ROCHESTER & PITTSBURGH.

THE fact that the Buffalo, Rochester & Pittsburgh, in the fiscal year ended June 30, 1910, made the best showing it has ever made fairly obtrudes itself from nearly every set of figures given in the road's report. One is apt to forget the conditions of the past year in the discussion of present conditions and future uncertainty. Just as last year the annual report of the Buffalo, Rochester & Pittsburgh, reflecting so closely as it does the manufacturing conditions in the East, came as rather a surprise, in so far as it showed conditions comparing unfavorably with those of 1908, so the report for 1910 comes as a reminder that notwithstanding the present uncertainty in the railway outlook the fiscal year of 1910 was an exceedingly prosperous one.

The Buffalo, Rochester & Pittsburgh is the first road to definitely break through the banner years of 1906 and 1907 in its showing of both gross and net earnings and of volume of the traffic carried. In 1910 the road earned $9,500,000 gross, or at the rate of $16,730 per mile on its 567 miles of line. The best previous gross was $8,700,000 in 1907, or about $15,231 per mile. It is instructive to note that in 1907 the company was operating two miles more than in 1910. Last year the net earnings amounted to $3,400,000, or $5,986 per mile. The best previous net was in 1907, when the company earned $3,300,000, or $5,843 per mile. The principal figures of the income account for 1910 are compared with corresponding figures for 1909 in the table at the end of this review.

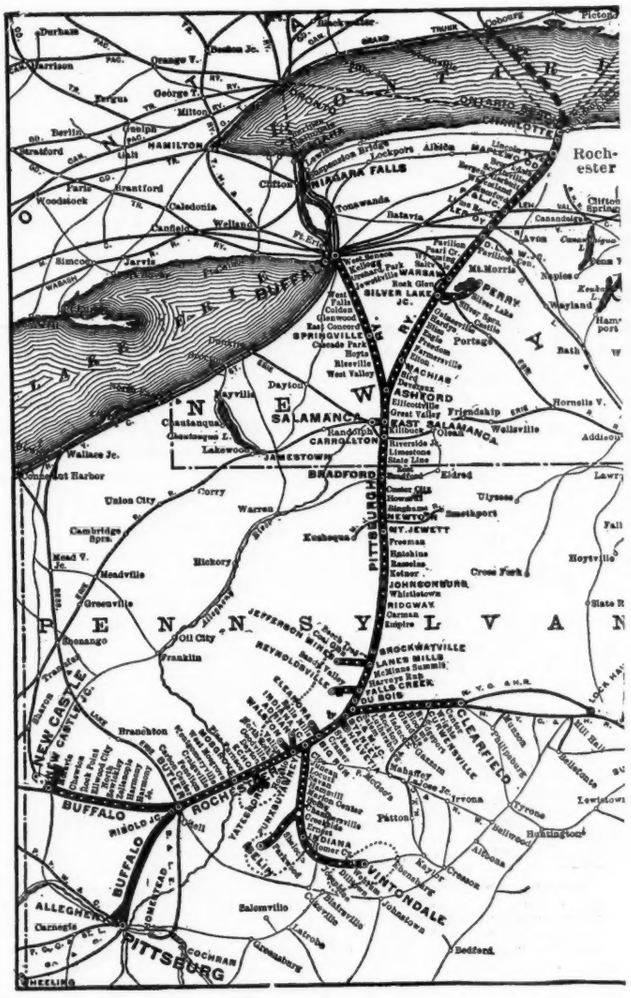
The slight decrease in mileage from 1907, due to realinement, taken in connection with a study of the accompanying map, and with the fact that of the total tons of revenue freight carried, amounting in 1910 to 10,170,483 tons, 6,526,087 tons was bituminous coal and 1,234,310 tons was manufactures, goes far to give a clear understanding of the character of the Buffalo, Rochester & Pittsburgh. It is an independent property, conservatively capitalized, with apparently ample facilities for handling a heavy volume of traffic between the coal fields of Pennsylvania and Buffalo and Rochester, on the Great Lakes. From Indiana Junction, where the various branch lines converge to Ashford, where the two main lines to Buffalo and Rochester branch, the road is double-tracked. It is laid almost throughout the main line with 80 and 90-lb. rail, and has 298 miles of sidings and switch tracks.

There is no discussion in President Iselin's report of the pending action of the Interstate Commerce Commission in regard to increased freight rates, but there is a table showing certain freight statistics of the years since 1900 that might form the basis of a quite convincing argument in favor of higher rates. The years 1905, 1907 and 1910 were the fat years for the B., R. & P. In 1905 the railroad carried 9,266,733 tons of freight, earning $6,809,123 gross. The amount received per ton per mile was 5.1 mills, and the company figured that it carried its freight at an average cost of 3.15 mills per ton per mile, leaving net earnings of 1.95 mills per ton per mile. In 1907 the road carried 9,548,796 tons, earning $6,928,645 gross, receiving 4.98 mills per ton per mile and earning net 2 mills per ton per mile. In 1910 the road carried 10,170,483 tons, earning gross $7,562,259 and receiving 4.81 mills per ton per mile, earning net 1.81 mills per ton per mile.

The company spent ample sums, it is true, in maintenance of way last year, but followed strictly and in detail the rules laid down by the Interstate Commerce Commission for charging additions and betterments to capital account and not operating expenses. Last year $906,000 was charged to capital account for additions and betterments. Of this sum, $241,000 was spent for water stations and $131,000 for sidings and yard extensions.

Operating expenses as a whole amounted to $5,900,000, making the operating ratio 66 per cent., comparing with total operating expenses in 1909 of $4,700,000 and with an operating ratio of 65 per cent. Transportation expenses amounted to $2,550,000 last year, and these expenses consumed 28.55 per cent. of gross earnings. In 1909 transportation expenses amounted to $2,100,000, and consumed 29.22 per cent. of gross earnings. Maintenance of way last year cost $1,200,000, or $1,356 per mile of first, second, etc., track (two miles of sidings and switch tracks being counted equal to one mile of main track). In 1909 maintenance of way cost $800,000, or $863 per mile of track.

Maintenance expenses are not given in detail in the annual report of the B., R. & P., so it is impossible to make the usual comparison in cost of repairs per unit of equipment. As a whole, maintenance of equipment cost $1,900,000 in 1910 and $1,500,000 in 1909. The company spent last year a total of $2,066,683 for new rolling stock. It bought 15 locomotives, consisting of one Atlantic, two decapods and 12 consolidation engines, paying for these locomotives $237,593, or an average of $15,820 per locomotive. The company bought 2,000 freight service cars,




Buffalo, Rochester & Pittsburgh.

of which 817 were box cars, and the remainder double hopper bottom gondola cars, at a total cost of $1,708,447, an average of $854 per car.

Traffic statistics make a creditable showing in 1910 compared with any previous year in the company's history. In 1910 the tons moved one mile totaled 1,572,897,173. This is an increase of 26 per cent., or 327,951,076 ton-miles over 1909. On the other hand, the mileage of revenue freight trains totaled 2,415,817, an increase of 18.5 per cent., or 376,692 ton-miles. An even better achievement in operating efficiency is shown by train load figures. In 1901 the average train load was 406 tons, and, with the exception of 1904 and 1908, it has increased every year since then. In 1909 the train load was 597 tons; in 1910 it was 638 tons.

The following table shows the character of tonnage moved in

1910 and 1909, and the percentage of increase last year in each class of traffic over the previous year:

| | Tons | | Per cent., |
|---|---|---|---|
| | 1910. | 1909. | increase. |
| Bituminous coal | 6,526,087 | 5,186,043 | 25.8 |
| Coke | 578,380 | 301,386 | 91.9 |
| Iron ore | 558,550 | 466,956 | 19.6 |
| Pig and bloom iron | 209,032 | 192,137 | 8.8 |
| Other freight | 2,298,434 | 1,862,468 | 23.4 |

The balance sheet, prepared in accordance with the rules prescribed by the Interstate Commerce Commission and compared with a recast balance sheet for the previous year, shows the company in a considerably better position that it was last year. Cash on hand amounted to $2,657,336 in 1910 and $2,082,919 in 1909. Working assets amounted to $5,786,553 last year, comparing with $3,748,945 the year before. These figures compare with working liabilities of $1,286,226 in 1910 and $744,807 in 1909. Besides the increase in cash, the principal increase in assets is in materials and supplies, which are carried at $1,194,859 in 1910, comparing with $690,785 in 1909. Under working liabilities, audited vouchers and wages unpaid naturally show an increase in 1910 over 1909, with the higher rate of wages being paid; and the balance sheet also shows $150,450 loans and bills payable in 1910, while there were no loans and bills payable in 1909.

In the second half of 1908 the company reduced the common dividend from a 6 per cent. annual basis to a 4 per cent., and although there was a surplus available for preferred and common dividends of $1,199,676, or 8.4 per cent., on the common stock, after the payment of 6 per cent. on the $6,000,000 preferred stock the company continued the 4 per cent. annual rate.

In President Iselin's very brief general remarks he calls attention to the building of a second blast furnace at Josephine, Pa., which it is estimated will materially increase the revenue tonnage of the Buffalo, Rochester & Pittsburgh. Josephine is almost at the southern end of the Vitondale branch of the road, so that the road will get a haul on iron ore from the Great Lakes equal to almost the entire length of its main line.

The following table shows the results of operations in 1910 compared with 1909:

| | 1910. | 1909. |
|---|---|---|
| Average mileage operated | 567 | 568 |
| Freight revenue | $7,562,259 | $6,001,572 |
| Passenger revenue | 986,370 | 887,625 |
| Total operating revenue | 8,936,117 | 7,171,897 |
| Maintenance of way | 1,220,190 | 769,037 |
| Maintenance of equipment | 1,857,017 | 1,538,191 |
| Traffic | 120,169 | 101,259 |
| Transportation | 2,551,197 | 2,095,212 |
| Total operating expenses | 5,903,905 | 4,665,171 |
| Taxes | 188,095 | 133,000 |
| Operating income | 2,841,769 | 2,373,092 |
| Gross corporate income | 3,394,143 | 2,809,905 |
| Net corporate income | 1,527,374 | 1,042,422 |
| *Appropriations | 327,697 | 12,484 |
| Dividends | 780,000 | 780,000 |
| Surplus | 419,677 | 249,939 |

*Of the appropriations, $12,697 was paid into the pension fund in 1910 and in 1909. In addition, in 1910, $125,000 was paid into sinking funds under equipment agreements, and $190,000 was used to pay one-half of the principal of equipment bonds, series D, E, and F, the other half being refunded by 4½ per cent. bonds under the terms of the consolidated mortgage, and these bonds were held in the treasury.

## NEW BOOKS.

*The Railway Library.* Compiled and edited by Slason Thompson, manager of the Bureau of Railway News and Statistics. Gunthorp-Warren Printing Company, Chicago. 403 pages; 6 in. x 9 in.; cloth.

Mr. Thompson has brought together in this volume a number of papers and addresses by prominent railway executives and students of railway subjects. Some of the chapters deal with the early history of railways in America, one of these being the first annual report of the chief engineer of the Pennsylvania Railroad. Most of the papers, however, deal with contemporary affairs and particularly with government regulation of railways. Among the prominent railway men whose names appear in the table of contents are: James J. Hill, Daniel Willard, Frank Trumbull, A. H. Smith, Julius Kruttschnitt, C. C. McCain, E. P. Ripley and J. B. Thayer. Others from whose writings selections have been made are John F. Wallace, Logan G. McPherson, John C. Spooner, W. M. Acworth and Sir George S. Gibb. Sir George S. Gibb's paper on "Railway Nationalization" is a discussion, from the standpoint of English railway men, of government ownership, and Mr. Acworth's paper, "The Relation of the Railroads to the State," tells of the relations between railways and the state in various countries. The concluding chapters of the book contain the report of the Senate committee on interstate commerce in 1909 opposing legislation giving the Interstate Commerce Commission power to restrain advances in railway rates, and Mr. Thompson's statistics of American railways for 1909.

*American Railway Association Proceedings; Vol. V,* 1907-1909. New York; W. F. Allen, Secretary, 24 Park Place; 1,073 pages; 9 in. x 11¼ in.; price $5.

This volume is thicker than any of its predecessors, although it covers a shorter period of time, which indicates the increasing amount of work that is being done by the association. The largest single subject dealt with in the present volume is the regulation of the transportation of explosives and other dangerous articles. As in former volumes, the index is made up in great detail, parts of it amounting to an abstract of what was done by the association on the subject dealt with. This index alone, printed in six-point type, leaded, with wide margins, fills 40 pages, in addition to the 1,073 pages of the body of the work. Under the index head, Committee Reports, the item Car Efficiency fills five pages; Executive Committee, four pages, etc.

# Letters to the Editor.

## HOW TO TEACH POLITENESS—BY EXAMPLE.

Philadelphia & Western Ry. Co., Upper Darby, Pa., Aug. 5, 1910.

To the Editor of the Railway Age Gazette:

Your issue of July 1 contained an excellent editorial under the title, "Can Politeness Be Taught?" Had this been a discussion concerning the qualities of materials or efficiency of locomotives there would have been considerable intelligent comment and criticism on the article by officials, but as the writer deals with the human agencies upon which the successful operation of a railway depends, it is likely to be permitted to rest undisturbed.

For many years railways have applied themselves most earnestly to the improvement of roadbed and equipment; they have built better engines and cars and greatly improved their physical resources, but there has not been the same care and attention given to the selection and training of employees.

Coming to the question, "Can politeness be taught?" the storekeepers of Berlin have recently started a special school for their clerks, the sole object of which is to be thorough training in dealing with buyers from every point of view. The pupils are instructed, not only in the details of the several trades, but also how to talk agreeably to customers, how to bow gracefully, how to handle customers who are in a bad temper, and how to conduct an animated conversation without undue familiarity. All this, of course, is based upon the principle that the polished clerk will sell more than the uncouth variety.

In the old-fashioned stores of England, which may seem slow to some of us, the civility and painstaking care of the employees goes very far to make amends for what we may miss in the equipment of the places themselves. In the main, this same courtesy prevails in the best stores in this country. If courtesy is requisite and attainable in stores, it is certainly essential and possible to secure it on railways.

The appeal issued by the Delaware, Lackawanna & Western, referred to in your article, is presented in a clever and pleasing way, but the reasons given to prove that courtesy pays are out of place. To advocate courtesy on the basis that it pays implies a right to be discourteous when it is obvious that it does not pay.

In forming a staff of excellent men the same homely rules

apply as in securing a fine herd of cattle or in packing peaches —by careful selection, supplemented by judicious elimination of the unfit. Real courtesy is based upon sympathy and sincerity. If the instincts of the individual are right there will be an individual manifestation of kindness, justice and fair play, with considerate appreciation of what is due to others.

The manifestation of the feelings, good or bad, of an employee, may make a lasting impression upon a passenger. The writer, while a conductor on the Pennsylvania Railroad, on arriving at Broad Street Station one morning, while passing through a gate, was accosted by a distinguished-looking man, who asked, "What time does the first express train leave for Macon, Georgia?" I answered, "I don't know," and was about to add that I would ascertain, when the man sneeringly said, "I thought you didn't," and, turning on his heel, he walked away. I followed him and said, "I beg your pardon, sir; I would like to make an explanation; there are several lines running out of this station in different directions. I have just come in from Harrisburg and am not certain what time the first train leaves for Macon, but if you will come with me to the bureau of information, we can soon ascertain." On reaching the bureau I asked for the leaving time of the train, secured a time-table and ascertained the track from which the train departed. I then showed him the train gate and gave him the time-table. He then said to me, "I owe you an apology." I replied, "No, you don't owe me anything—it is a pleasure for me to serve you." He insisted, "Yes, sir, I owe you an apology. I live in Georgia and am a stranger here. Some time ago a conductor came through that gate; he was dressed just as you are, and I asked him what time the first express train left for Macon. He said, 'I don't know' in an indifferent way and passed on. After awhile another conductor came through and I asked him the same question. He hardly looked at me, but he, too, said, 'I don't know' and paid no further attention to me. By the time you came along my patience was about exhausted and I spoke to you in a manner that I regret and therefore I offer an apology." I answered, "That's all right, sir, so far as I am concerned; your annoyance was justified but unfortunate. I hope you will have a pleasant journey and that your future experience with the Pennsylvania Railroad will be satisfactory and pleasant." What I did was only what any decent man would do for another. If I had neglected that man he would somehow have found a train, of course; but no man on earth could afterward convince him that courtesy was to be found among employees on the Pennsylvania Railroad.

On the 19th of last month, in conversation with a gentleman at a hotel in Atlantic City, I was told that he lived at Newburgh, on the Hudson, and used the New York Central a great deal. Continuing, he said:

"I have heard a great deal about the high standards of service on the Pennsylvania Railroad, but my experience in coming from New York here last week does not bear out what I have heard of it. The conductor came into the coach where I was riding. A young man and young woman were sitting together just ahead of me with two dress-suit cases close beside their seat in the aisle of the car. The conductor said to the young man in a loud, gruff tone of voice, 'Say, do these belong to you?' pointing to the dress-suit cases. The young man answered, 'Yes,' and the conductor said in a rough, loud, contemptuous tone, 'Well, get them out of here.' The young man looked about, at a loss to know what to do with them. He put one of the suit cases in front of them between the seats, but there was not room there for the other. He tried to put it in the rack, which was then pretty well filled. In trying to get it in the rack, he knocked out a bottle of perfume, which fell down on the floor in front of a woman in the seat ahead. She was instantly in a rage and said, 'There, you have broken my bottle of perfume that cost me two dollars and a half.' The young man who was trying to dispose of the suit cases was manifestly embarrassed through the whole proceeding, but he tendered five dollars to the woman and expressed as best he could his apologies for breaking her bottle, and there the conductor stood gloating over the whole affair. The young man and his companion were embarrassed and humiliated; the woman whose bottle was broken was enraged, and my mother and I were indignant at the brutal conduct on the part of the conductor. Others felt just as we did. Is that a type of the exceptionally high standard of service that the employees are talking about now, in their strike settlement, as being rendered on the Pennsylvania Railroad?"

I said, "That does not represent the Pennsylvania Railroad nor the average standard of its service; the officers of that company would be very sorry to see any passenger subjected to such humiliating treatment, and there are men wearing its uniform that would be just as indignant at such treatment as you are." He answered me, "That conductor represents the Pennsylvania railroad. The company put him there and it keeps him there." What answer could I make to that? That man uttered the truth; the company did put that man there and is keeping him there. It is the company's duty to know whether or not a man in his position is fit to deal with passengers. Here was a conductor, presumably of mature years, having passed through several years of training, or at least several years when he should have been trained—a man well paid and cared for. If he had pleasantly and quietly said to the owner of the suit cases, "It is against the rules to have suit cases in the aisles; let us see what we can do with these," and taken hold good-naturedly to dispose of the obstruction, everything could have been satisfactorily adjusted.

The railway officer employing men is under an imperative obligation to provide the best men obtainable, and he is under a moral obligation to provide men who are proper associates for other employees. Good men attract men of like character. The conditions of a railway are vastly different from those of a store or workshop, where men can be closely supervised. On a railway they are sent out in small groups and a great deal depends upon the individual quality and character of the men composing crews.

After securing the proper men they must be taught and trained. Some men resent discipline, but it is only the trained horse that wins the race. A capable, courteous conductor, if given the right men, will train up men exemplifying the good qualities that he himself possesses. Instead of the professor of deportment, it seems that on the large systems we shall some day have the social engineer, qualified to look beneath the pretensions of men and discern the real qualities that animate the individual.

So much for the employing agency; now let us consider the obligations that rest on the employees. Permit me to again quote a leaf from my own experience. While a young man the Pennsylvania railroad gave me employment as a freight brakeman, and it was my good fortune to remain in the employ of that company for 34 years. I was advanced as fast and as far as my abilities warranted. Notwithstanding panics, good wages were regularly paid and indulgent consideration was given to the interests of every employee. I did not "give" my best days to the Pennsylvania railroad, but I sold my skill and abilities, and they paid me for every day's service, treating me with kindness at all times and with sympathetic consideration when suffering from illness and accident. I have always felt profoundly grateful for the consideration shown me. My case is but a typical one and could be multiplied by thousands; therefore, it was only natural that I should feel a deep concern and pride in maintaining and improving the standards of the service. The desired standards can only be attained when every man in the service, without regard to rank, is animated by a sincere desire and purpose to acquit himself in the best possible way in dealing with all that pertains to the service, and especially in dealing with its patrons.

While serving as a passenger conductor in the local service I received $3.50 a day. I felt at that time that I was very well paid and expressed myself to that effect to my associates, pointing out that a capable foreman carpenter, who rode on my train, was receiving but $3 a day for ten hours' work, whereas I received $3.50 for seven hours, which in the main only provided me with proper exercise. For that same service to-day a conductor receives $4.67 a day, though conductors on the electric roads receive but half that amount for much harder work.

There is no question but what politeness can be taught, but it depends altogether on having the right teachers and the right scholars. Nine-tenths of life's actions, say psychologists, depend

upon habit; hence, the importance of training men into good habits. The railway officer who aims to inculcate courtesy should exemplify it individually in all the relations of life. Emerson said, "Every great institution is the lengthened shadow of one man." That truth is particularly applicable to railways, for if the spirit of real courtesy characterizes the individual intercourse of officials, it is bound to permeate the ranks of the employees. Politeness can be taught, but the trainmasters are overburdened now; in fact, the strain on some of them tends to impair their amiability. Who, then, is to teach this divine accomplishment? Above all things, let us get away from the thought that courtesy pays; that is too sordid a thought to be associated with real courtesy. Courtesy embraces fair play, right relations, respect, consideration, sympathy, kindliness, reverence and sincerity, and in daily life it brings the sweetest of all compensations. It is a divine element that a man imbibes from his mother; like mercy, "it blesseth him that gives and him that takes."

"A poor man served by thee shall make thee rich,
A sick man helped by thee shall make thee strong;
Thou shalt be served thyself by every sense
Of service which thou renderest."

WILLIAM H. SIMMS.

## A SUPERINTENDENT WHO REQUIRES POLITENESS.

Melrose, Pa., August 5, 1910.

To the Editor of the Railway Age Gazette:

Reading your issue of to-day I noted a letter in which the point is urged, in response to a recent editorial suggestion, that railway superintendents seldom, if ever, seriously impress upon trainmen the importance and value of politeness. Having traveled thousands of miles over many railways, it is my conviction that as a rule the managers would seem not to appreciate how invaluable an asset to any public service corporation is the hearty good will of its patrons.

But there are some notable exceptions, and they deserve to be held up as good examples. For many years I have lived on the Philadelphia & Reading, and have seen it operated under conditions of bankruptcy and of the highest prosperity. Adversity taught the operating officers of this company how much can be done under necessity. Prosperity has enabled them to demonstrate what good service a railway can perform.

About 200 miles of the most largely traveled lines of the Reading system are operated as the New York division, of which Charles A. Beach is superintendent. This man is a Christian gentleman. He began his railway career as a freight trainman around about Albany, N. Y. His superintendent at that time was a man of great profanity, and Mr. Beach then promised himself that if he should ever be placed over men in a position of authority he would not swear at them. This, by way of introduction. As superintendent of the New York division of the Reading, Mr. Beach holds "school" in his office about once a week. Trainmen and others attend in squads. The lessons consist largely of friendly, man-to-man talks concerning all manner of things which enter into the practical operation of a carefully managed railway.

Upon the passenger trainmen Mr. Beach makes it a point to impress the lesson that courtesy is just as much a part of their duty as it is to obey operating rules. This teaching has borne fruit, not only in the conduct and demeanor of the men, but in making friends for the company.

Ladies, particularly, note this condition. I have, on various occasions, heard ladies, not only from other parts of the United States, but also from Europe, comment upon the courtesy and unassuming, but gentlemanly, attention shown them by conductors and brakemen on Reading trains; have heard this remarked upon as something out of the ordinary, and, therefore, worthy of praise. And so I want to bear witness to the fact that there are superintendents who try, and that successfully, to carry passengers agreeably as well as comfortably and safely.

SAMUEL H. BARKER.

## TRAVELING ENGINEERS' CONVENTION.

The eighteenth annual convention met at the Clifton hotel, Niagara Falls, Canada, on August 16, 17, 18 and 19, President C. F. Richardson, assistant to the general superintendent of motive power of the Chicago, Rock Island & Pacific, presiding. In his address President Richardson placed special emphasis on the importance of fuel economy and the extent of the authority of the traveling engineer.

### PRESIDENT'S ADDRESS.

*Fuel Economy.*—The railways are facing an unusual condition. The increased cost of operation, brought about by increased cost of material and labor, makes it necessary to practice the strictest economy, and I believe one of the greatest opportunities for the traveling engineers to assist in reducing the cost of operation lies in fuel economy. This question has a special interest for us, as it comes directly under the supervision of the traveling engineer, and the possibilities of economy in fuel consumption, together with the question of how to educate the engineer and fireman to the highest efficiency, are questions demanding serious consideration by the members of this association. Also the waste of coal in other ways should be carefully looked into on his division by every traveling engineer.

The saving that may be brought about by using low grade coal in many places where high grade coal has been used, will cause your general manager to wonder why it was not done before. If you will study the situation and make a recommendation showing what can be saved by making the change, it will be worth while. The traveling engineers should be able to give better information as to these savings than anyone else, and we cannot afford to overlook any opportunity to reduce the cost of operation of the road we represent. Most railway managers are looking for subordinates who can work out plans to reduce the cost of pulling a ton of freight one mile.

Another important matter is to systematize our work; we should keep certain records that we may work intelligently. I believe every traveling engineer should have a record of the draft arrangement in the front end of every engine on his division. By having this record, he will be able to regulate the drafting of the engines to reduce fuel consumption. I am assuming that the traveling engineer receives proper support from the master mechanic in not allowing the roundhouse employe to change the draft appliances after they have been properly adjusted. It has been my observation that more fuel is wasted by reducing nozzle tips to overcome the poor operation of a locomotive and neglected work in the roundhouse in not keeping flues bored out, grates in good condition, valves squared, front ends tightened and packing in good order, than can possibly be saved by the traveling engineer. When an engine is once properly adjusted to steam and be economical in coal, if it fails for steam, the real cause of the failure should be located instead of reducing nozzle tips to overcome it. When the traveling engineer can get the proper support from his master mechanic to have the draft appliances let alone after they are rightly adjusted, it will increase the efficiency of the traveling engineer by allowing him more time to ride with and instruct such engine crews as are not 100 per cent. in efficiency.

Many railways fail to get the best results of the work of the traveling engineer, the organization being such that he has no authority over the men. An organization of this kind I consider sadly defective, and I am unable to understand why it should be allowed to continue. The traveling engineer should be a man capable of instructing and directing the men under him, and if he is not, a change should be made at once. The engine crews must understand that the traveling engineer is responsible for the successful operation of the locomotives on the road, and that they are operating them under his supervision. When their attention is called to irregular or improper handling of engines, the instructions of the traveling engineer

must be obeyed, and not be referred to the master mechanic 100 miles away.

SUPERHEAT.

The report opened with a brief study of the elementary principles of superheated steam, followed by detail, illustrated descriptions of types of superheaters that have been developed since the report presented at the 1908 convention, and including the Emerson, Union Pacific, Jacobs, Buck, Buck-Jacobs, Vaughan-Horsey applied to a Mallet locomotive and the Cole improved superheater. Data were presented for a number of tests, all of which showed a decided advantage of the superheater engine over the non-superheater engine.

*Conclusions Based on Superheater Tests.*—The engineer of tests of the Atchison, Topeka & Santa Fe recently completed a set of elaborate tests conducted to compare the road performance of a locomotive equipped with a Jacobs superheater, with the road performance of a locomotive of the same class without a superheater. He reports that the tests lead to the following conclusions:

1. There is a marked decrease in coal consumption for a superheater engine. The decrease averages 20.8 per cent. per thousand ton miles for up-grade runs, 11.5 per cent. for down-grade runs and 19.6 per cent. for constant hard working of engine on heavy grades.

2. There is a reduction of total water for up and down-grade runs, also for heavy grade work with superheater engine.

3. Superheater engine uses 10 per cent. less water per hour, developing more drawbar horse-power on heavy working.

4. Superheater engine shows for heavy working a decrease of 16.3 per cent. in coal per indicated horse-power hour.

5. Superheater engine shows for heavy working a decrease of 12.9 per cent. in dry steam per indicated horse-power hour.

6. There is a reduction in coal of 14.1 per cent. per drawbar horse-power hour in favor of superheater engine.

7. Superheater engine shows a decrease in heat units per drawbar horse-power of 17.3 per cent.

8. There is a marked increase in evaporation of superheater engine. It gave an average of 11.6 per cent. more dry steam per pound of coal than non-superheater engine.

9. Superheater engine with 16.6 per cent. less heating surface gives equivalent evaporation of 10.6 per cent. more water per square foot of heating surface than the non-superheater engine.

10. Superheater engine shows a boiler efficiency 7.6 per cent. greater than non-superheater engine; with credit for heat to superheater from waste gases, the boiler efficiency is 15.8 per cent. greater.

11. Boiler capacity is increased because of heat recovered in superheated steam by 7.1 per cent. Boiler requirements are further decreased on account of lower water rate of engine, due to superheated steam. The resulting effect of superheating, as shown by the tests, is to increase the effective boiler capacity without increasing its actual capacity.

12. Superheaters insure that the steam is delivered to the cylinders without moisture in the steam, even though the engine may be working considerable water in the steam as it leaves the dome. On this account a superheater engine is not liable to knock out cylinder heads, or in case of compound engines loosen the intermediate joint between a high and low-pressure cylinder.

13. Steam from low-pressure superheater was superheated 90 to 125 degs. and supplied to cylinders at not over 450 degs.

14. Superheat was sufficient to prevent entirely the dripping of water from cylinder cocks.

15. There was great uniformity of superheat under varying loads and rates of fuel consumption.

16. The tests show that for operation under local conditions with usual side track delays a superheater engine gives greater economy than a non-superheater engine.

17. Steam entering low-pressure cylinders from the high-pressure exhaust in non-superheater engines contains more moisture than steam entering high-pressure cylinders. Superheating steam involves evaporation of all moisture in the steam before any superheat occurs. On account of the greater per cent of moisture to low-pressure cylinders than high-pressure cylinders under ordinary conditions, superheating low-pressure steam is more desirable than superheating high-pressure steam.

18. The brick arch in the firebox gave an increase in economy of operation by decreasing the coal per thousand ton miles and by increasing the evaporation per pound of coal.

19. Superheater engine developed 20 per cent. more drawbar horse-power per square foot of heating surface than non-superheater engine.

20. Superheater engine gave for best performance 10 per cent. more horse-power for the same cylinder volumes than non-superheater engine.

There are over 800 superheater engines on 20 railways in North America, and the number is increasing daily. The following information concerning the operation of superheated steam locomotives was taken from replies to a circular of inquiry:

*Boiler Pressure.*—The general practice upon applying superheaters is to increase the diameter of the cylinders when the boiler pressure is reduced. This results in decreased boiler repairs.

*Lubrication.*—But little trouble has been experienced in lubricating superheater engines, and it has not been found necessary to adopt forced lubrication where piston valves are used. But little information was received in regard to lubrication of slide valves. The Canadian Pacific with Vaughan-Horsey superheaters uses oil feed to each end of steam chest, and also to center of cylinder. About 80 per cent. of the oil is fed to steam chest. Wheeling & Lake Erie (Cole), Great Northern (Schmidt and Emerson), and El Paso & Southwestern (Cole), lubricate in cylinder as well as valve chamber.

*Fuel.*—The great Northern (Schmidt and Emerson) reports a saving of 18 per cent. in coal and 20 per cent. in water. Wheeling & Lake Erie (Cole) reports a saving of 20 per cent. in coal and water. Canadian Pacific (Vaughan-Horsey) saves 10 to 15 per cent. of coal consumed in freight service, and 15 to 20 per cent. in passenger service. Pennsylvania (Baldwin)—Coal about equal; saving in water of 6½ per cent. Santa Fe (Jacobs) reports saving of from 15 to 20 per cent. in coal and from 10 to 15 per cent. in water.

*Front End Apparatus.*—No change of importance in front end apparatus seems to be made when superheater is applied.

*Steaming Qualities.*—Engines with superheaters steam better than non-superheater engines. The Canadian Pacific finds that on an engine with cylinders too large for the capacity of the boiler with saturated steam, the same boiler will supply the same cylinders satisfactorily when using superheated steam.

*Foaming Water.*—The Canadian Pacific, Great Northern and Santa Fe report that engines with superheaters operate to better advantage with foaming water than engines not so equipped.

*Piston Rod and Valve Stem Packing.*—The Great Northern uses Allan metal for rod packing on engines carrying 200 lbs. of steam where temperature runs up to 600 degs. Other roads use same packing as used before the introduction of superheaters.

*Leaking Joints in Superheater.*—The Northern Pacific has had some trouble with leaking joints between superheater header and superheater pipes. Gaskets of copper and asbestos are now being used and give better service than previous gaskets. The Great Northern is now welding superheater pipes into return bends. The Wheeling & Lake Erie (Cole) is using ground joints in superheater tube connections in place of cup and ball, and believes this method superior to using dummy when grinding joints in the superheater tubes. The Canadian Pacific uses gaskets of soft copper and has very little trouble with leaking joints. Ground joints used in connection with headers to dry pipes and steam pipes. The El Paso & Southwestern uses ground joints.

*Discussion.*—The discussion brought out the following facts:

Unless at least 50 degs. of superheat are obtained it will not pay to install a superheater in a locomotive. Ninety per cent. of the superheaters in service are of the fire-tube type. One of the members stated that his road feared to use a high degree of superheat because of the possible effect on the cast iron fittings. Another member replied that such fittings had given no trouble with the high superheat used abroad. The question of lubrication for superheated locomotives was thoroughly discussed. Roads that are using superheaters extensively seem to have no particular trouble, although judging from the discussion some of those who have only one or two superheater locomotives have had some difficulty, particularly where slide valves are used. The members generally believe the superheater locomotive has come to stay and will be extensively adopted. In an address on the third day of the convention D. R. MacBain, superintendent of motive power of the Lake Shore & Michigan Southern, stated emphatically that the superheater had come to stay. The Canadian Pacific has about 400 superheater engines which are proving very satisfactory and, in Mr. MacBain's opinion, any attempt to convert these to saturated steam locomotives would meet with most strenuous objection on the part of the enginemen.

### EDUCATION OF FIREMEN.

We take it for granted that any man who accepts the position of fireman does so with the intention of some day becoming an engineer, and those of us who employ them should be careful in our selections. Mistakes can easily be made by employing a man on his fitness for a fireman rather than as an engineer. Men for the position of fireman should be of good moral habits, physically able for the duties expected of them, eyesight good, and have a fair education. We recommend a physical and visual examination to be required before they are employed.

A man who has passed the experimental stage of firing and has been placed on the list for regular duties should commence the study of some part of the locomotive. We would advise that these studies be divided into four parts as follows:

1. The boiler and its attachments. Firemen should be taught the construction of the steam gage, the correct meaning of the figures on its dial, the failures to which it is subject and how to proceed should one fail on the road. They should have a fair knowledge of the pop-valves and their functions and should be taught the dangers of carelessly overlooking their failure to work, also the danger of misusing them in a way. It would be well to teach firemen the circulation of water in a boiler, the bad effects of too much water, the dangers of not enough water, and the best way to safely know when it is foaming. They should know how much strain each staybolt carries and to what bolts this strain is transferred when one is broken, and should be taught to mark and report every hollow staybolt they may have to plug on the road. They should know how the draft rigging is constructed in the smokebox of each class of engine they may later have to run, also how to adjust it and the cause for doing so. Every man firing a locomotive should know how to work an injector; also how to care for it on the road and have it ready for immediate use, more especially in cold weather. They should be taught the failures to which injectors are subject, how to locate the trouble and remedy it, if possible to do so, and make an intelligent report of it at terminals.

2. Inspection of the locomotive; the proper names of the parts inspected and how to make intelligent reports at terminals. There are two important things to consider: defects, commonly called pounds and blows, and how to locate them while running and with the engine standing still. In years past the men had to be thoroughly posted on setting up wedges and keying up rods before they were promoted to the position of engineer, but with the more modern engines these rods are bushed and it requires little skill on the engineer's part to inspect and report this work, which perhaps has caused some of us as teachers to grow careless in training the young men of to-day. The committee recommends that the present-day engineer and fireman should be trained to take care of these parts of an engine as carefully as was done in the past. There was another old custom on some railways where the men were compelled to have some shop experience before they were promoted to the position of engineer, which we believe would be valuable in educating the young men of to-day, if possible to practice it. They were employed as machinist helpers, which gave them information of the locomotive and its construction that served them well in after years. If young men between 19 and 21 years of age could be given these positions at a living salary and afterwards transferred to road service, it would be best for both individual and the railway company and would not be compelling them to serve two apprenticeships, as they are not eligible to road service until they are of age.

3. Engine failures should be considered next. The men should be taught the best and quickest way to remedy any trouble of this kind, get the main track clear, and if possible get the engine and train safely to the terminal.

4. Valve motion. Every engineer should have a fair knowledge of valve motion, yet it is the hardest part of the locomotive for some men to understand. A traveling engineer should teach the men on his division about this part of the engine carefully and patiently. He may have to revert to many shop rules to get them to understand it, and should do so if necessary. They have the right to know how to set an eccentric, how the length of the rods is obtained, the distance the valves move on their seat for the different cut-offs at which an engine may be worked, and any other information that applies to valve setting which would give them a more thorough knowledge of the motion at work, thereby aiding them to quickly detect and locate a defect in it which would allow the valves to admit and exhaust steam to and from the cylinders irregularly. They should be taught expansion of steam and should know how to trace steam from the boiler into the cylinders and out through the exhaust tips. There are books which contain this information and every engineer and fireman should have them and keep them where they can be studied as often as possible.

We recommend progressive examinations as another method of educating the fireman. These examinations may be either in writing or oral, as best suited to the conditions existing on the different railways. The final examination for promotion should be a review, and we recommend that it be oral. If firemen were required to stand an examination on machinery equal to that required of them on standard rules they would have a better knowledge of the locomotive.

Another and one of the best methods of educating the firemen on machinery is in the class room. Meetings held as often as possible are valuable and very necessary. The traveling engineer should preside over them and teach and advise the men to the best of his ability. A good valve model is valuable for these meetings.

Classes can be taught from the locomotive with good results, and we recommend it. In these classes the men can be taught the names of the different parts of the locomotive, and also the functions of each part and how to handle it in case any part should have to be removed on account of a failure. The engine should be placed in position to test for any defect the men may have to look for with it standing still, and they should be shown how to make these tests.

### LATEST DEVELOPMENTS IN AIR-BRAKE EQUIPMENT.

Detail illustrated descriptions were given in the report of the New York automatic control equipment, the K triple valve, and the Westinghouse L N and the New York J A improved passenger equipments.

### NEW VALVE GEARS.

The construction and operation of the Walschaert, Baker-Pilliod and the Hobart Allfree radial balanced valve gears were described and brief directions were given in each case as to what should be done in case of breakdown.

### LOCOMOTIVE LUBRICATION.

The report traced the development of locomotive lubrication.

In summing up it said: "One of the first improvements was the introduction of the sight-feed lubricator, and the keen interest taken by all whose duty it was to look after lubricating materials, in providing suitable storage rooms, measuring and weighing facilities and educating employees in the most economical method of handling lubricants. It is estimated that the adoption of the lubricator and the educating of the men as to its use has brought about a reduction in the cost of at least 50 per cent. Other things that have followed in the line of progress are the reclaiming of all old packing and waste, the careful attention given to renovating and re-using it, keeping a correct record of all lubricating materials, charging it to engineers as well as to engines, and submitting monthly statements showing the amount of oil drawn and the miles run by each engineer.

"Another important factor is the driving box lubricator and the use of grease on the crank pins, the grease being pressed into cakes for the driving box cellars and into sticks for the crank pin cups; also by reclaiming and re-using grease taken from cellars undergoing repairs. It is estimated that with the economical handling of grease this device has been responsible for a reduction from 25 to 40 per cent. in the cost of lubrication. The careful attention given to preparing packing for engine trucks, trailers, oil-lubricated driving boxes and tender truck boxes, and the care exercised in packing them by not allowing strands of packing to hang over the edge, thereby siphoning the oil out, the improved construction and convenient location of lubricators, so they can be easily observed by the engineers both day and night, have resulted in a reduced cost. Another important factor is the close supervision of the issuing of all lubricating materials as well as of its use by the road foremen of engines. Where engines are pooled, the individual supply cans have resulted in a reduced cost and have encouraged the engineer in his efforts to make a good showing."

*Discussion.*—The question of lubrication brought out a lengthy discussion. D. R. MacBain, superintendent of motive power of the Lake Shore & Michigan Southern, who was present during the discussion, said in an address the next day that it was poor policy to save one cent's worth of oil if it resulted in a loss of 33 cents' worth of coal. In his opinion the greatest cause of trouble was due to the drying of the valves and cylinders in drifting into a station. Plenty of oil must be used in starting up in order to overcome this.

### FUEL ECONOMY.

*Value of Draft Appliances.*—With the different kinds of fuel used for locomotives there is without doubt a large field to work in for drafting engines to obtain fuel economy. The first consideration should be given to the service required, next to the quality of coal furnished, and then the engine should be drafted to use the minimum amount of coal for furnishing the necessary amount of steam. There are so many conditions which enter into the proper drafting of the locomotive that in treating this subject we must assume that the following items are given consideration and proper attention: The boiler must be kept free from mud and scale and leaks, the crown and flue-sheets should be kept free from honeycomb, and the grates must have the proper opening. No lost motion should be permitted in the grate rigging. The ash-pan should have the necessary number of openings to admit air for perfect combustion. The steam pipe joints, nozzle base and tip joints, the cinder chute and handhold plate joints, smokebox ring and door joints should be kept tight to prevent any irregularities in the draft. The cylinder packing, valves, piston rod and valve rod packing should be kept free from leaks. The valves should be adjusted for an equal distribution of the steam in the cylinders, and the engine must have the proper cylinder clearance.

With these items properly cared for and the valves and cylinders receiving proper lubrication, you are in position to adjust the draft appliances to burn the least amount of coal possible, if properly handled, to do the required amount of work expected of the engine. But in ordinary locomotive practice we find many of the above mentioned items neglected, which affect the steaming of an engine, and after a locomotive has been properly drafted in a majority of cases the first thing done in the roundhouse is to reduce the size of the exhaust nozzle by bushing or bridging, in order to overcome defects in some other part of the engine. In consequence draft appliances, which have been thoroughly demonstrated to be all right, have not given good results.

It has been the experience of the committee that where the grate area and netting are increased fuel economy has resulted, and we believe that there is room for further economy along these lines.

*Firing Practices, Including the Prevention of Black Smoke.*—In order to prevent black smoke and form the habit of proper firing it is necessary when employing the fireman to instruct him in the importance of learning to fire light and even, scattering the coal as thinly over the grate surface as possible, opening and closing the door between each scoopful of coal and allowing sufficient time between each shovelful for the gases to be expelled and consumed. Explain to him that black smoke is unconsumed gas and a waste of fuel. In addition to this he should also be notified of the importance of seeing that the fire is properly prepared before starting with a train, to have tools and appliances to care for the fire and to see that the grates are in proper working order; also that the grates must not be shaken too soon after leaving the terminal, or too much, or too violently at a time. After receiving these instructions, the fireman should be required to make his student trips with a fireman whose practice is light and careful firing and be kept with him until he is O. K.'d by both engineer and fireman; then before being allowed to enter the service he should be asked what practice he has followed while making his learning trips, and again impressed with the importance of being always careful to fire lightly, carefully and regularly for the prevention of black smoke, economy of fuel, maintaining an even temperature in the firebox, preventing clinkered and dirty fires, and avoiding the annoyance to patrons of the road and the public.

Many devices have been introduced for the prevention of black smoke, such as air and steam jets, but it is the opinion of many that these devices simply overcome the shortcomings of poor firemen and are wasteful of fuel, and that if the firemen are properly instructed and their interest kept stimulated the black smoke can be prevented to a large extent without these devices. The brick arch, when heated to a high temperature, has given good results in preventing black smoke and in saving fuel, but by many mechanical men it is not considered economical on account of the expense of its application, cost of maintenance and prevention of easy access to the flues.

The use of the blower with the firebox door slightly open, when the engine is standing or drifting, is successful in preventing black smoke to a large extent, and in this connection it is important that the blower valves be placed convenient to the fireman; also that the blower pipe be large enough and properly located in the smokebox to have a good action on the fire. An important factor in the prevention of black smoke is to have the engine free from leaks in the firebox and smokebox, the boiler clean, all flues open, grates working properly, ash-pan with sufficient openings for the proper admission of air, and the pistons and valves not blowing. With the engine free from leaks and blows and properly drafted for free steaming, there is no good reason why the smoke cannot be reduced to a minimum.

Another thing essential in reducing black smoke, as well as to secure fuel economy, is to have the engine crew working in harmony and co-operation with each other at all times. Impress upon the engineer that good results in the prevention of black smoke cannot be obtained unless he properly supplies the boiler with water and works the engine as economically as pos-

sible; he should keep the fireman fully informed of all moves that are to be made.

*Should Fires be Banked or Knocked at Terminals?*—We believe that this matter is best governed by local conditions. For instance, where boiler troubles prevail, due to bad water and inferior coal, it has not been found practicable to bank fires; however, in some sections of the country it has been found very economical to do so. A number of tests were made by one member of the committee on a road having about 1,000 engines in daily service, 75 per cent. of which had banked fires at terminals for 12 hours. It was found that there was a saving in fuel of about $700 per day, or $200,000 per year, by banking the fires.

A tabulated form of this test and kind of fuel used is shown below.

| Class, engine. | Grate surface, sq. ft. | Total htg. surf., sq. ft. | Coal used—New F., lbs. | Coal used—Bnk F., lbs. | Hours layover. | Cost—Coal. | Cost—F. oil. | Remarks, save. |
|---|---|---|---|---|---|---|---|---|
| 4-6-2 | 54.0 | 3,923 | 2,500 | ..... | 12 | $3.75 | $0.10 | ..... |
| 4-6-2 | 54.0 | 3,923 | ..... | 1,800 | 12 | 2.70 | ... | $1.15 |
| 4-6-0 | 34.6 | 2,665 | 2,000 | ..... | 12 | 2.85 | .08 | ..... |
| 4-6-0 | 34.6 | 2,665 | ..... | 1,200 | 12 | 1.71 | ... | 1.22 |
| 4-4-0 | 18.7 | 1,360 | 1,200 | ..... | 12 | 1.71 | .06 | ..... |
| 4-4-0 | 18.7 | 1,360 | ..... | 700 | 12 | 1.00 | ... | .77 |

An analysis of coal used during the test is shown below. For 4-6-2 engines see first line; 4-6-0 and 4-4-0 see last line.

| Fixed carbon. | Volatile matter. | Ash. | Sulphur. | Moisture. | B. t. u. |
|---|---|---|---|---|---|
| 55.88 | 33.36 | 10.15 | 1.57 | .61 | 12,935 |
| 57.34 | 32.02 | 10.20 | 4.37 | .44 | 13,247 |

It is claimed by others that the disadvantage of banked fires is that it prevents the examination of grates and grate rigging and the cleaning of flues, which may result in the engines not steaming freely on the road, causing greater and more rapid variations of temperature than would be caused by knocking the fire, also resulting in more coal being used by the engine crew in their anxiety to keep a uniform steam pressure. It is advocated by many that if an engine is to be placed in service within 12 hours, it is better to leave the fire undisturbed until one hour before the engine is to be used, as there is always sufficient fire in the firebox when the trip is completed to keep for several hours by adding a few shovelfuls of coal, and no cold air will strike the flues as it does when the fire is banked.

*Devices and Appliances for Use on Engines and Tenders to Prevent Waste En Route.*—There are a number of devices and appliances used on engines and tenders to prevent waste en route, such as shields over tank valves, side boards and racks. One of the best devices of this kind is a hood extending about 24 in. toward the center of the tender; however, these are not advocated for tenders in passenger service, as it is claimed they make the tender top-heavy. We believe that one of the best methods of preventing waste of coal is to have the coal docks placed so that there will be no occasion for overloading the tenders in order to make coal stations. Considerable attention should be given to the lost motion between engine and tender. This lost motion should not be allowed as the coal will be jarred off while running. The springs and tender trucks should also receive careful attention to make the tender as easy riding as possible and to prevent the coal being jarred off. An angle plate placed at the right side of the tender at the gangway prevents coal from working out of the gangway. We also recommend that the openings in the coal gates should not be so large that they will allow coal to sift down and work out of the gangway.

*Discussion.*—The discussion of the paper on fuel economy was so enthusiastically entered into that the officers had great difficulty in bringing it to a close in a reasonable amount of time. The most important contribution was an address by D. R. MacBain, superintendent of motive power of the Lake Shore & Michigan Southern, which has already been mentioned in connection with the discussion of the reports on superheating and lubrication. In his opinion the first requisite is to start with the engines in good condition. A 10 per cent. saving is possible by the proper installation and maintenance of the front ends. Most designs of front end are good if properly maintained, but a large loss results if this is not done. The engines should be drafted for the poorest coal, where more than one grade is used. This will mean a loss of economy when high grade coal is used, but it may be reduced to a minimum by the proper adjustment of the nozzle and skilful work on the part of the engineer and fireman.

He stated that if the brick arches were to be taken from locomotives on the New York Central, Lake Shore & Michigan Southern and Michigan Central the service would be paralyzed, because of the loss in efficiency and capacity. It is well known that until a couple of years ago Mr. MacBain was strongly opposed to the use of the brick arch, especially in pooled service. He has found, however, that with the improvements in brick arch design and construction and the proper organization to look after them, they not only give no trouble but are a source of considerable economy. All locomotives on the Lake Shore are now equipped with them. The saving in fuel is estimated at 10 per cent. and black smoke is eliminated.

The discussion centered very largely on the use of the brick arch. The committee had directed attention to its value in preventing black smoke and in saving fuel. A number of the members spoke enthusiastically about these advantages and showed that with the more improved types of brick arch the disadvantages mentioned by the committee had been entirely overcome.

Mr. MacBain has noticed that the engineers, particularly the older ones, are not always as attentive to business and as interested in fuel economy as the firemen are. As far as possible only one class of coal should be used on each division.

### PROGRESSIVE EXAMINATION.

A committee was authorized to prepare for distribution as quickly as possible a revised series of questions for progressive examinations. After a short discussion it was decided to prepare the answers and have them accompany the questions, thus making it easier for the student to master the subject.

*Election of Officers.*—The following officers were elected for the ensuing year: President, F. C. Thayer, general road foreman of engines, Southern Railway, Atlanta, Ga.; first vice-president, W. C. Hayes, superintendent locomotive operation, Erie, New York; second vice-president, W. H. Corbett, road foreman of engines, Michigan Central, Jackson, Mich.; third vice-president, F. P. Roesch, master mechanic, El Paso & Southwestern, Douglas, Ariz.; treasurer, C. B. Conger, Wm. Sellers & Co., Grand Rapids, Mich.; secretary, W. O. Thompson, master car builder, New York Central & Hudson River, East Buffalo, N. Y. Executive committee: J. McManamy, road foreman of engines, Pere Marquette, Grand Rapids, Mich.; C. F. Richardson, assistant to general superintendent of motive power, Chicago, Rock Island & Pacific, Chicago, Ill., and M. J. McAndrews, road foreman of engines, Michigan Central, St. Thomas, Ont.

It was decided to hold the 1911 convention in Chicago. The secretary's salary was increased from $600 to $1,200 per annum. The association has 770 members.

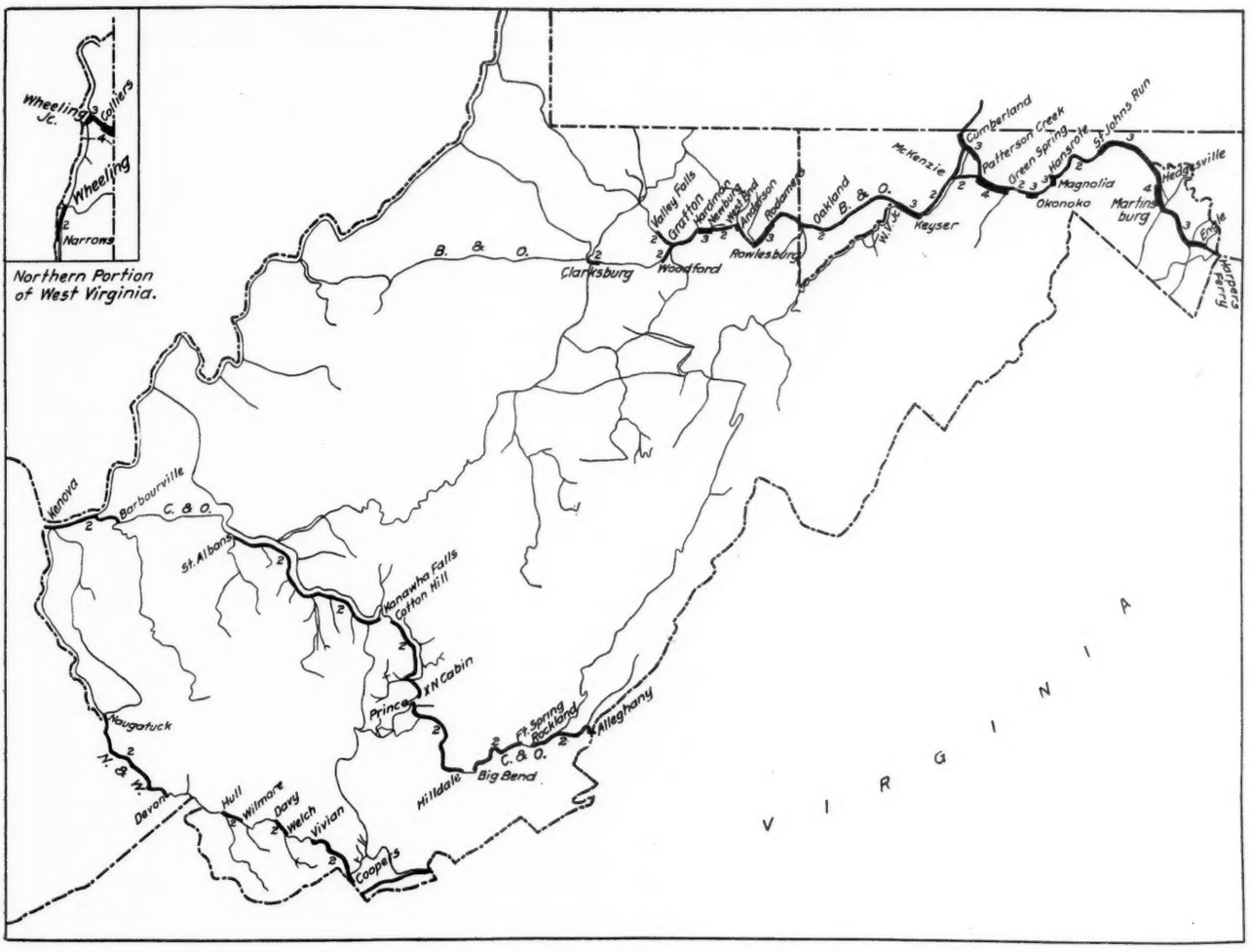
*Exhibitors.*—The following companies had exhibits in the billiard room of the Clifton hotel: The American Arch Company (brick arches), New York; The Commercial Acetylene Company (headlight and accessories), New York; Detroit Lubricator Company (lubricators), Detroit, Mich.; Franklin Railway Supply Company (various devices), New York; C. M. Goodrich (cab window), Clinton, Iowa; The Leslie Company, Lyndhurst, N. J.; Pilliod Bros. (valve gear), Toledo, Ohio; The Pilliod Company (valve gear), New York; Strong, Carlisle & Hammond Company (Randall graphite sheet lubricator), Cleveland, Ohio; Watson-Stillman Company (Chambers throttle valve, Noscalon boiler water treatment, hydraulic tools), New York. The Hunt-Spiller Manufacturing Corporation, South Boston, Mass., unfortunately lost its exhibit in shipment.

## MULTIPLE TRACK RAILWAYS IN WEST VIRGINIA.

The railways in West Virginia on which there are two or more main tracks are shown in the accompanying map, the number of tracks on the different sections being indicated by the thickness of the lines in the drawing. On the Norfolk & Western, between Naugatuck and Kenova, about 80 miles, there are two single-track lines which serve in part for double-track service, most of the westbound trains being run over one of these lines and most of the eastbound over the other. The termini of the sections having more than one main track are as follows:

WEST VIRGINIA.

| | No. tracks. | Approx. miles. |
|---|---|---|
| *Baltimore & Ohio.* | | |
| Harpers Ferry to Engle | 2 | 3 |
| Engle to Martinsburg | 3 | 15 |
| Martinsburg to Hedgesville | 4 | 5 |
| Hedgesville to Sir John's Run | 3 | 23 |
| Sir John's Run to Hansrote | 2 | 14 |
| Hansrote to Magnolia | 3 | 7 |
| Magnolia to Okonoko | 2 | 10 |
| At Okonoko | 3 | .. |
| Okonoko to Green Spring | 2 | 5 |
| Green Spring to Patterson Creek | 4 | 7 |
| Patterson Creek to North Branch | 2 } | 7 |
| North Branch to Cumberland | 3 } | |
| Patterson Creek to McKenzie | 2 | 5 |
| Keyser to West Virginia Junction | 3 | 6 |
| Oakland, Md., to Rodamers | 2 | 14 |
| Rodamers to Rowlesburg | 3 | 8 |
| Rowlesburg to Anderson | 2 | 6 |
| Anderson to Tunnelton | 3 | 1 |
| West End to Newburg | 2 | 5 |
| Newburg to Hardman | 3 | 3 |
| Hardman to Woodford | 2 | .. |
| Grafton to Valley Falls | 2 | 6 |
| At Clarksburg | 2 | .. |
| Wheeling to Narrows | 2 | 7 |
| *Chesapeake & Ohio.* | | |
| East Allegheny, Va., to Rockland | 2 | 20 |
| Fort Spring to Big Bend | 2 | 18 |
| Hilldale to Prince | 2 | 30 |
| XN Cabin to Cotton Hill | 2 | 28 |
| Gauley to Lewis | 2 | 52 |
| Barboursville to Russel, Ky. | 2 | 29 |
| *Norfolk & Western.* | | |
| Coopers to Glenalum (incl. parts unfinished) | 2 | 64 |
| Devon to Naugatuck | 2 | 36 |
| *Pennsylvania.* | | |
| Pennsylvania State line to Collier | 4 | .. |
| Collier to Wheeling Junction | 3 | 6 |
| Wheeling Junction to Ohio State line | .. | .. |




Multiple Track Railways in West Virginia.

## THE MANAGEMENT OF SMALL PASSENGER STATIONS.

The unpleasant features of passenger stations, having come up for discussion (as they do every summer), and the new wisdom on the subject being no better than the old, we reprint here an extract from Charles Paine's "Elements of Railroading," written in 1884.

The waiting-rooms should not be scrimped in size nor in comfort; at large stations, such as important junctions, passengers find it convenient often to remain at the station between trains, particularly ladies and children; the more attractive and convenient the rooms are, the oftener they will go over the road. A fire-place in each waiting-room adds not only to the cheerful appearance of the room, especially in spring or autumn, when a little fire only is needed, but it insures ventilation in the easiest way, which is a valuable result, for all public rooms should have ventilation to be comfortable, although we have become accus-

tomed from long habit to tolerate bad air. A few chairs, of strong pattern, which can be moved about, should always be provided in the ladies' room for the use of mothers with infants, or for persons who would like to sit in a group; it is not possible for more than three persons to talk together upon a bench, and an infant cannot be suitably dandled or nursed upon one.

Nowhere are the waiting-rooms so well lighted in the daytime as in the United States; in part because we have the most cheerful sun, and in part because we have taken care to avail of it; but generally it is impossible to read at all in them after dark; not often because there are not lights enough but that they are placed too high. It is often difficult for the passenger to see his money or ticket, while he is buying it at the window, with sufficient distinctness to enable him to correct a mistake, if one were made.

There should be ample shelves outside of the ticket offices and telegraph offices near the windows, upon which the travelers may open out their wallets or write their despatches.

If drainage can be had, or if it is not necessary, the station should be provided with a cellar, to contain fuel and a furnace or steam apparatus for heating the entire building. There is no other convenient or so neat mode of storing the fuel; the risk of conflagration and the nuisance of dirt are both lessened by having only one fire to attend to, and that out of sight.

The matter of drainage will settle the question of water-closets also; if that can be secured, they are the most convenient of any form of privy, for water can be pumped by hand into a tank sufficient to provide for them, where other means do not exist. But water-closets must be kept warm enough not to freeze. Where drainage can be had, the dry earth closet will answer the purpose perfectly; it requires no skill nor unusual labor, only energy on the part of the agent to see that it is properly attended to. The horrible vaults which have so long disgraced our civilization should not be tolerated by a respectable railroad officer, even if the improved sanitary vigilance of the towns would permit their use. There has not been any invention yet, however, which will secure neatness on the part of the public which uses the privies; they must be watched, and attended to when necessary, at once; if neglected, the Augean stables were nothing in comparison with what they will attain to; yet that does not excuse a public corporation which fails to provide decently those conveniences which it professes to afford its patrons.

The urinary vessels always give much odor unless the urine is discharged into cold water; if the water, which is generally discharged at the bottom of the vessel, were allowed to fill it and to overflow at the top there would be no odor. Try this! In winter they must not be allowed to freeze, of course.

A cheap means of providing more waiting room at a station likely to be crowded is to place benches outside, under shed roofs or overhanging eaves; they will be frequented in any tolerable weather by smokers and by many other persons who prefer fresh air. A well with a good pump in it and a cup attached is a comfort at every station, or a drinking hydrant and even a fountain where water is abundant; either is much more attractive than a water cooler, apt to be not too well attended to. As to the surroundings, let them be neatly kept, at any rate. The addition of trees and grass with graveled paths suggests itself. Flowers are beautiful and attractive, but require more care and more expense, while they are of less consequence. The ash heap, so common at country stations, does not seem to be needed, and the ashes spread over muddy roads will serve some good purpose if distributed not too thickly.

## FOREIGN RAILWAY NOTES.

Consul W. L. Avery, of Belize, says that the British Honduras Railway extension is nearly completed. The pier construction at Commerce Bight, 1,200 ft. long, extending into four fathoms of water, is built with heavy piling from the American Creosote Works, New Orleans, La. The railway line extends through dense tropical growth, which will be cleared for fruit planting. The Government will grant small holdings only, selling crown land at $3 to $8 an acre, with the obligation to cultivate within a given time. The United Fruit Company, New York, is beginning work on its 7,528 acres recently purchased. It is expected that before many months a steamer load of 20,000 bunches of bananas will be shipped from the pier.

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The Prussian authorities have been moved, apparently by a recent accident when signals were not observed, to issue new orders regarding the inspection of signals. Every year the officer in charge of trains, the officer in charge of signals, and an engineman selected for his experience and familiarity with the part of the line to be inspected, are to go over the road on a locomotive, but only two of them at a time on engines hauling trains. They are to pay particular attention to the following points: 1. The visibility of the signals—their background, their obscuration by telegraph poles, station buildings, trees, etc.; the effect on night signals of arc lights in the vicinity, or the reflection of other signals; the condition of the glasses of signals. 2. The distance of the signal from the danger point. 3. The grouping of signals, where several stand near each other, in one row or otherwise; the appearance of the signal from every position in succession; the possibility of the confusion of signals. 4. The substitution for signals standing left of the main track of signals on the right of the track. 5. Substitution of high distant signals for low ones. 6. Superfluous signals. 7. The proper designation of main and branch tracks, where one post has several signals.

## PROPOSED SAFETY APPLIANCE STANDARDS.

The Interstate Commerce Commission, in accordance with the provisions of the safety appliance law, approved April 14, 1910, has, after conferences with representatives of the railways and their employees, prepared a set of safety appliance standards. A hearing will be held in Washington, D. C., September 29, 1910, at 10 a.m., at which time arguments for or against the suggested application of these appliances may be presented. It is desirable from the standpoint of the railways that they agree among themselves as to just what changes they want made and go before the commission as a unit, as suggested in an editorial note in this issue. To this end any criticisms or suggestions should be forwarded to the president of the Master Car Builders' Association, T. H. Curtis, superintendent of machinery, Louisville & Nashville, Louisville, Ky.

The proposed standards for box and other house cars, except caboose cars, are reproduced below. Similar standards have been prepared for all classes of freight and passenger cars and for steam locomotives used in both road and switching service, or both.

### Box and Other House Cars, Except Caboose Cars.

#### HAND BRAKES.

*Number.*—Each freight car shall be equipped with an efficient hand brake, which shall operate in harmony with the power brake.

*Location.*—So located that it can be safely operated while car is in motion. The brake shaft shall be located on the end of the car, to the left of and not less than 17 nor more than 22 in. from the center.

*Material.*—The brake shaft shall be of wrought iron or steel, without weld. Brake wheel shall be of malleable iron, wrought iron or steel.

*Construction.*—There shall be not less than 4 in. clearance between brake wheel and car. Outside edge of brake wheel shall be not less than 4 in. from a vertical plane parallel with the end of the car and passing through the inside face of knuckle when closed, with coupler horn against the buffer block or end sill.

The brake pawl shall be pivoted upon a bolt or rivet not less than ⅝ in. in diameter or upon a trunnion secured by not less than ½ in. bolt or rivet, and there shall be a rigid metal connection between brake shaft and pivot of pawl. Top brake shaft support shall be fastened with not less than ½ in. bolts or rivets. (See Plate "A.")

A brake-shaft step shall support the lower end of the brake shaft. A brake-shaft step which will permit the brake chain to drop under the brake shaft shall not be used. "U"-shaped form of brake-shaft step is preferred. (See Plate "A.")

Brake shaft shall be not less than 1¼ in. in diameter, arranged with square fit to secure hand-brake wheel at its upper

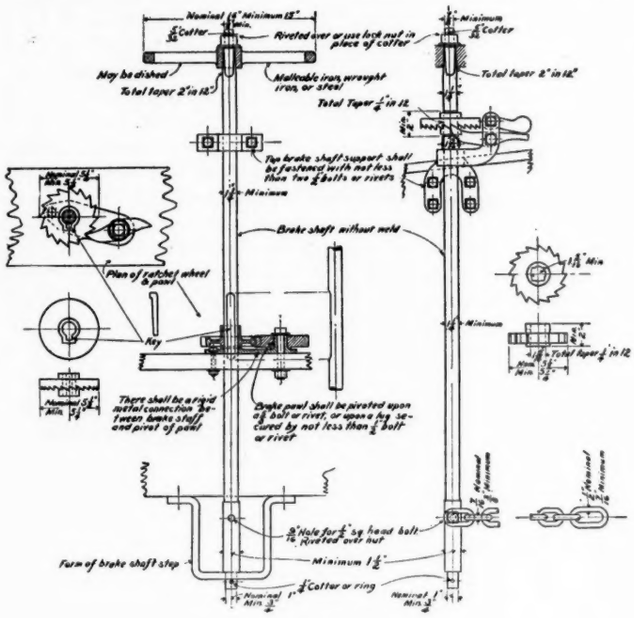



Plate A.

end; said square fit shall be not less than ⅞ in. square. Square fit shall taper nominally 2 in 12 in. (See Plate "A.")

The brake chain shall be of nominally ⅜ but not less than ⅜-in. wrought iron or steel, with a link on the brake-rod end of nominally ½ but not less than ⅜-in. wrought iron or steel. (See Plate "A.")

Lower end of brake shaft shall be provided with a trunnion nominally 1 but not less than ¾ in. in diameter, extending through the brake-shaft step and held in operating position by a ¼-in. cotter or ring. (See Plate "A.")

Brake-shaft drum shall be not less than 1½ in. in diameter; said drum shall receive a ⅝-in. hole for not less than ½-in. square-headed bolt, which shall secure brake chain to shaft; nut on said bolt shall be secured by riveting end of bolt over nut. (See Plate "A.")

Brake ratchet wheel shall be secured to brake shaft by a key or square fit; said square fit shall be not less than 1⅝ in. square and taper nominally ¼ in. in 12 in. When ratchet wheel with square fit is used, provision shall be made to prevent the ratchet wheel from rising on the shaft to disengage the brake pawl. (See Plate "A.")

Brake ratchet wheel shall be nominally 5½ but not less than 5¼ in. in diameter, and have nominally 16 but not less than 14 teeth. (See Plate "A.")

If brake ratchet wheel is more than 36 in. from the brake wheel, a brake shaft support shall be provided to support this extended upper portion of the brake shaft; said brake-shaft support shall be fastened with not less than ½ in. bolts or rivets.

Brake wheel shall be held in position on brake shaft by a nut on a threaded extended end of brake shaft; said threaded portion shall be not less than ⅞ in. in diameter; said nut shall be secured by riveting over or the use of a lock nut or cotter; said cotter shall be not less than ⅜ in. in diameter. (See Plate "A.")

Brake wheel may be flat or dished; nominally 16 and not less than 15 in. in diameter, with square fit for brake shaft in hub of said wheel; taper of said fit, nominally 2 in 12 in. (See Plate "A.")

BRAKE STEP.

If brake step is used, it shall be not less than 28 in. in length. Outside edge shall be not less than 8 in. from face of car and not less than 4 in. from a vertical plane parallel with the end of the car and passing through the inside face of knuckle when closed, with coupler horn against the buffer block or end sill. Supported by not less than two metal braces; minimum cross-sectional area ⅜ by 1½ in. or equivalent; which shall be securely fastened to body of car with not less than ½ in. bolts or rivets.

RUNNING BOARDS.

*Number.*—One longitudinal running board.

*Location.*—Full length; center of roof. On outside metal roof cars, two latitudinal extensions from the longitudinal running board, to the corners above ladder locations if car construction will permit.

*Material.*—Wood.

*Dimensions.*—Longitudinal board not less than 18 in. in width; nominally, 20 in. Latitudinal extensions not less than 24 in. in width if car construction will permit.

*Construction.*—Shall be continuous from end to end and not cut or hinged at any point; provided that the length or width of running boards may be made up of a number of pieces securely fastened to saddle blocks with screws or bolts. The ends of the running board shall be not less than 6 nor more than 10 in. from a vertical plane parallel with the end of the car and passing through the inside face of knuckle when closed, with coupler horn against the buffer block or end sill; and if more than 4 in. from the edge of the roof of the car, it shall be securely supported with two substantial metal braces.

*Fastenings.*—Shall be securely fastened to the car.

SILL STEPS.

*Number.*—Four.

*Location.*—One near each end on each side, as near end of car as practicable. Outside edge of tread of step not more than 4 in. inside of face of side of car; nominally, flush with side of car. Tread shall be not more than 24 in. above rail; nominally, 22 in.

*Material.*—Wrought iron or steel.

*Dimensions.*—Minimum cross-sectional area ½ by 1½ in. or equivalent. Minimum length of tread 10 in.; nominal length, 12 in. Minimum clear depth 8 in.

*Construction.*—Steps exceeding 18 in. in depth shall have an additional tread.

*Fastenings.*—Securely fastened with not less than ½-in. bolts with nuts outside when possible and riveted over; or not less than ½ in. rivets.

LADDERS.

*Number.*—Four; except on cars with platform end sills 6 or more inches in width measured from end post or siding, and extending entirely across the end of car; such cars shall have two end ladders. Side ladders not required on cars with platform end sills as heretofore described.

*Location.*—One near the right end of each side not more than 8 in. from the end; one near the left side of each end not more than 8 in. from the side, measured from inside edge of ladder stile or clearance of ladder treads, to corner of car. On cars having platform end sills, as heretofore described, the end ladders may be located near center of ends of car.

*Material.*—Hard wood, iron or steel.

*Dimensions.*—Minimum clear length of tread; side ladders 16 in., end ladders 14 in. Maximum spacing between ladder treads 19 in. Top ladder tread shall be located not less than 8 nor more than 12 in. from roof at eaves. Spacing of ladder treads shall be uniform from top ladder tread to top tread of sill step. Hard-wood treads; minimum dimensions 1½ by 2 in. Iron or steel treads; minimum diameter ⅝ in. Minimum clearance of treads 2 in.; nominal clearance 2½ in.

*Construction.*—Metal ladders without stiles near corners of cars shall have foot guards or upward projections not less than 2 in. in height near inside end of bottom treads. Stiles of wooden ladders will serve as foot guards.

*Fastenings.*—Securely fastened with not less than ½-in. bolts with nuts outside when possible and riveted over; or not less

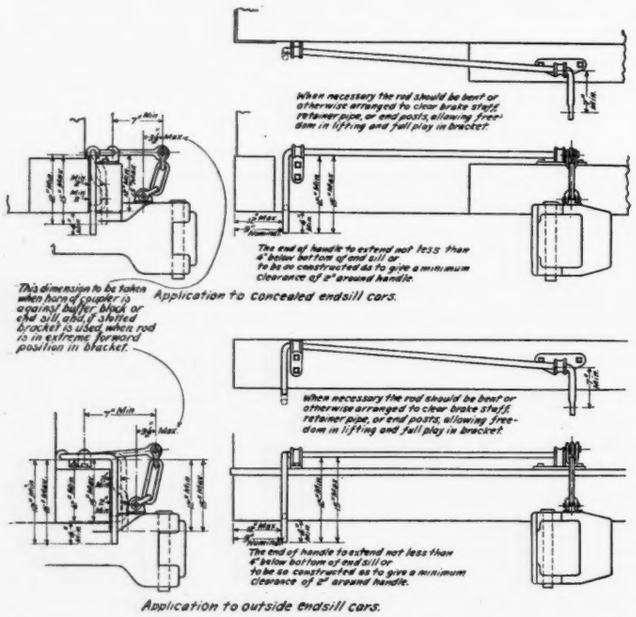



Plate B.

than ½-in. rivets. Three-eighths in. bolts may be used for wooden treads which are gained into stiles. No part of car or lading above end sills, except buffer block, brake shaft, brake wheel, brake step, running board or uncoupling lever shall extend to within 12 in. of a vertical plane parallel with the end of the car and passing through the inside face of knuckle when closed, with coupler horn against the buffer block or end sill.

ROOF HANDHOLDS.

*Number.*—One over each ladder. One right-angle handhold may take the place of two adjacent specified roof handholds provided the dimensions and locations coincide and that an extra leg is securely fastened to car at point of angle.

*Location.*—Roof; one in line with and running parallel to treads of each ladder, not less than 8 nor more than 15 in. from edge of roof, unless construction of car will not permit.

*Material.*—Wrought iron or steel.

*Dimensions.*—Minimum diameter, ⅝ in.; minimum clear length, 16 in.; minimum clearance, 2 in.; nominal clearance, 2½ in.

*Fastenings.*—Securely fastened with not less than ½-in. bolts with nuts outside when possible and riveted over; or not less than ½-in. rivets.

SIDE HANDHOLDS.

*Number.*—Four. (Tread of side ladder is side handhold.)

*Location.*—Horizontal; one near each end on each side of car. Not less than 24 nor more than 30 in. above center line of coupler; except as provided above where tread of ladder is handhold. Outer end not more than 8 in. from clearance of handhold to end of car.

*Material.*—Wrought iron or steel.

*Dimensions.*—Minimum diameter, ⅝ in.; minimum clear length, 16 in.; minimum clearance, 2 in.; nominal clearance, 2½ in.

*Fastenings.*—Securely fastened with not less than ½-in. bolts with nuts outside when possible and riveted over; or not less than ½-in. rivets.

HORIZONTAL END HANDHOLDS.

*Number.*—Eight or more. Four on each end of car. (Tread of end ladder is end handhold when within 8 in. of side of car.)

*Location.*—One near each side on each end of car not less than 24 nor more than 30 in. above center line of coupler; except as provided above when tread of end ladder is end handhold.

*Location.*—Outer end shall be not more than 8 in. from clearance of handhold to side of car. One near each side of each end of car on the face of the end sill or sheeting over end sill projecting outward or downward. Outer end not more than 14 in. from clearance of handhold to side of car. One additional end handhold on each end of cars with platform end sills, as heretofore described, to be not less than 24 in. in length, located near the center of the car, not less than 30 nor more than 60 in. above platform end sill.

*Material.*—Wrought iron or steel.

*Dimensions.*—Minimum diameter, ⅝ in.; minimum clear length, 16 in.; handholds 14 in. in length may be used where it is impossible to use one 16 in. in length on end sills. Minimum clearance, 2 in.; nominal clearance; 2½ in.

*Fastenings.*—Securely fastened with not less than ½-in. bolts, with nuts outside when possible and riveted over; or not less than ½-in. rivets.

VERTICAL END HANDHOLDS.

*Number.*—Four, on full-width platform end-sill cars, as heretofore described, having end ladder near center of each end of car. If end ladder is located within 8 in. of side of car, only one vertical handhold is required on each end of car, located at opposite side from ladder.

*Location.*—One near each side on the end of car not more than 8 in. from side of car; bottom end of handhold not less than 24 nor more than 30 in. above center line of coupler to clearance of handhold.

*Material.*—Wrought iron or steel.

*Dimensions.*—Minimum diameter, ⅝ in.; minimum clear length, 24 in.; minimum clearance, 2 in.; nominal clearance, 2½ in.

*Fastenings.*—Securely fastened with not less than ½-in. bolts with nuts outside when possible and riveted over; or not less ½-in. rivets.

UNCOUPLING LEVERS.

May be either single or double and of any efficient design, provided that—

*Location.*—Handles of uncoupling levers shall be not more than 6 in. from the sides of the car, except those shown on Plate "B" or similar designs. When single lever is used it shall be placed on left side of end of car. Uncoupling levers of design as shown on Plate "B" and similar designs shall be within the following prescribed limits: Handle to be not more than 12 in. from side of car; nominally, 9 in. The center lift arm shall be not less than 7 in. long. The center of eye at the end of center-lift arm shall be not more than 3½ in. beyond the center of eye of uncoupling pin of coupler when horn of coupler is against the buffer block or end sill. (See Plate "B.") The end of handle to extend not less than 4 in. below bottom of end sill or shall be so constructed as to give a minimum clearance of 2 in. around handle. The minimum drop of handle to be 12 in. maximum, 15 in. over all. (See Plate "B.")

## THE SIERRA LEONE GOVERNMENT RAILWAY.

BY EDGAR ALLEN FORBES.

It isn't much of a railway, compared with the New York Central or the Pennsylvania, or even with the newer railways now under construction in other British colonies on the west coast of Africa, but it is the crowning glory of a hundred years of English rule in Sierra Leone. It runs from Freetown, on the coast, 227 miles into the interior. Being the pioneer of British West African railways, its gage is the narrowest, 2 ft. 6 in., but it has a commercial and military and civilizing importance out of all proportion to its size. There are 220 miles of main line and 35 miles of branch lines.

As its name indicates, the road is a government enterprise, and the men who operate it are colonial officials. The first section was opened for traffic in 1899, and its extension has slowly but steadily gone forward year by year. The present inland terminus is within a day's march of the Liberian frontier, where the builders have apparently halted to await expected changes in the political status of the neighboring negro republic before going farther.

The road is a surface line, winding around the bases of the hills instead of cutting through them, and often avoiding the necessity of a trestle by making a long detour. In this respect the French railway builders in Africa are immeasurably superior to the British. The roadbed of the Sierra Leone Railway is a good piece of work, however; in spite of the torrential rains of the wet season, there has occurred but one serious washout in ten years. The grades are quite steep at times; the mountain section at Freetown rises 850 feet in 6 miles, but the light locomotives ascend it without evidences of shortness of breath.

Railway construction in every part of West Africa must overcome certain difficulties peculiar to this coast. One of the most serious is the insignificant looking white ant, usually known as the "bug-a-bug." This voracious ant has a mania for dried wood, and it devours everything from a dead tree in the forest to the furniture of the white man's bungalow. There are very few varieties of wood hard enough to resist its attack. In the face of an omnipresent enemy like the bug-a-bug, it would be folly to make use of timbers in construction work; so all the ties, piles and bridges are of metal instead of wood.

The inventory of rolling stock on December 31, 1908, showed 28 Leeds locomotives, 59 coaches and 204 freight cars on hand. Of the 50 main line coaches 20 are third-class, 14 are second-class and 7 are composites. There are 5 baggage cars and 4 "saloon vans." If these alleged parlor cars are all like that assigned for the use of the American Commission to Liberia, they are unworthy of the name. The nine remaining coaches, including one funeral car, are in use on the mountain section which serves the suburban district near Freetown. The European compartment system is in use, and first-class is none too good for the white man, however low his degree.

The 204 freight cars include many patterns. The covered cars number 68, and their capacity is from 7 to 8 tons each. There are also 5 covered cars with small compartments in front for the use of brakemen in bad weather. There are 28 high-sided cars and 10 others of the same type, but with removable corrugated iron covers—a special convenience designed by Mr. Comber, the general manager. The open ballast cars number 43, with 4 others having the corrugated covers, and there are 38 flat cars. The 8 remaining cars are inventoried as follows: 2 cattle cars, 2 mountain ballast cars, 2 mountain flat cars, and 2 construction cars.

The construction cost of the main line was about $5,248,800, and that of the mountain railway was approximately $187,200. This was financed by an issue of Sierra Leone Government bonds in 1904. The 4 per cent. interest is paid out of the revenues of the colony.

The most profitable year in the road's history was 1907, when the market for palm oil and palm kernels was particularly favorable. The net profit on the year's working on the main line was $71,563, a return of 1½ per cent. on its capital cost. The mountain section was operated at a loss of $8,198. From present indications the returns for 1909 will establish a new record.

It was not possible to obtain the exact figures showing the relation of inward to outward traffic; so far as freight revenues are concerned, the inward traffic is much the lighter. Of the imports into Sierra Leone in 1907, the following are the most important of those handled by the railway: Cotton cloth, £251,152; leaf tobacco, £49,193; beads, £10,823; gin and rum, £4,655; telegraph materials, £17,139. These imports, most of which found their way inland, amounted to £332,962, or $1,598,178.

Of the exports handled by the railway, the value of the palm kernels alone (£447,800) exceeded that of all the imports mentioned above. Other items of country produce exported in 1907 were: Palm oil, £51,144; rubber, £22,480; kola nuts, £113,674; ginger, £11,578; rice, £5,635, a total of £652,311, or $3,131,092. The greater part of these country products reached the seaboard via the railway, though many natives yet cling to the old trails, carrying their loads on their heads. Freetown is the only port of consequence in Sierra Leone. The road has a somewhat formidable rival in the Sierra Leone river, which affords both natives and traders a quick and cheap means of transportation, but the road is bending its energies toward this conquest also. The happy

A Flag Station for Natives.

thought of inaugurating market trains on certain days in the week has accomplished much in that direction. The railway statisticians appear to keep no records showing the volume of inland traffic as compared with that destined to Freetown, but the relation is approximately that which exists between the totals of imports and exports. The up-trains are not called on to carry more than half as much as the down-trains.

In a colony like Sierra Leone, which is yet in the first stages of development, the transportation of troops and government stores helps out the revenues immensely. In 1907 and 1908, government business contributed about 25 per cent. of the passenger revenue and from 6 to 11 per cent. of the freight.

Among the sources of miscellaneous revenue are some auxiliaries that are distinctly African. Three of these were inaugurated in the latter half of 1908, with a view to increasing the traffic by providing up-country traders with facilities for transporting palm kernels and other products from the villages to the railway. Two of these experiments—traction engines and bullocks—were disappointing on account of local conditions, but the method described as "barrel roller transport" seems to be working out. This is a very primitive method, the device being nothing more than a well-constructed barrel with a detachable head. The produce is loaded into the barrels, the heads are fastened down

and the barrels are rolled to the nearest station. It is a vast improvement over the native porterage method. The other auxiliaries consist of the Boia and the Baiima tramways (same gage as the main line) and a quarry of laterite stone, much used for building purposes in Freetown.

The telegraph system is also an asset of financial importance, as well as a railway and military necessity. The operators, including those at Freetown, are natives of the colony and give the management reasonable satisfaction, in spite of the slowness in transmitting and receiving messages. The service is not continuous all along the line; a telegram encounters two or three relays before reaching its destination.

In the revenue derived from passenger traffic there is an overwhelming preponderance of third-class tickets—those purchased only by the blacks. It is evident that the West African quickly learned to appreciate the conveniences of a railway, even though the saving of time be of no consequence to him whatever.

Through tickets over the 220 miles of main line are sold at approximately the following rates per mile: First class, 4¼c.; second class, 4⅝c.; third class, 3 1/5c. Between Bo (136 miles inland) and Freetown, second and third-class market tickets are sold on Mondays and Tuesdays at one fare for the round trip. The return ticket must be used on the up-train leaving Freetown on Wednesdays. Children over the age of three and under twelve are charged half fares.

On the Mountain Railway, Freetown's suburban line of six miles, the fares are as follows for the first, second and third classes, respectively: Single trip, 18c., 12c., 6c.; round trip, 30c., 20c., 10c. Most of the commuters travel second class for about $5 a month. Though it is a government railway, the officials do not ride free; but since they pay no rent for their $10,000 bungalows, the railway expense is not burdensome.

With a white population so small as to be scarcely appreciable, the opportunities for railway excursions are much curtailed. On holidays, however, trains are run up to Waterloo, where there are a merry-go-round and numerous "thirst parlors." One special that was sent out of Freetown during my visit carried 400 excursionists, mostly blacks. The general manager was quite proud of this train.

Under climatic conditions such as prevail throughout West Africa, one may expect constant trouble with machinery of all kinds—and with the men who have it in charge. Months of daily rain cause everything from a watch to a locomotive to go wrong with rust, and even in the dry season the atmosphere contains a superabundance of moisture. Moreover, a large part of the road's equipment must necessarily be entrusted to native subordinates, who have neither the requisite knowledge nor the inclination to forestall the necessity for repairs by the exercise of proper precautions. And, indeed, some of the white men who come out are deficient in the same respects, yet they must be paid higher salaries than they can command at home, and must also be furnished with transportation both ways (about $230) every eighteen months and also provided with expensive bungalows on the field. As a result of these and other conditions, the working expenses of the little railway amount to upward of $300,000 a year, the operating ratio being over 90 per cent.

Soft coal is used almost exclusively as fuel, the supply being always available at the station of the Sierra Leone Coaling Co. in Freetown. It is cheaper than wood because there are no good forests along the line, it being a region of "small bush."

**Passenger and Freight Station at Freetown.**

The general offices (with the exception of the auditing department) are in the Freetown station, which is a much finer depot than one would expect to see on this coast. In its extent and arrangements it is almost metropolitan. The country stations are also commendable structures and the grounds enclosing them are laid out in tropical plants and flowers. The only diminutive buildings are the flag stations, which are not much larger than a dry-goods box but answer their purpose admirably. The freight depot at Freetown has a novelty in the line of enabling native shippers to classify their own cargo according to its destination. Since they cannot read the painted signboards, the background of each is of a different color. A man accustomed to shipping goods to Bo, for example, need learn the place of deposit only once; thereafter he remembers the color of the sign.

The shops, engine house and car-sheds are nearly all at Clinetown, a suburb of Freetown, and these buildings are also quite

creditable. All the sheds are of zinc or corrugated iron, no wood being used in their construction. The machine shop and carpenter shop are beehives of industry, with Sierra Leone workmen in charge of two white men in each. The machine shop is quite useful to steamers also and to anybody needing repair work. A feature of the yards is the group of attractive stone bungalows for the white employees. Each of those holding the higher positions has a house to himself, while the fitters, enginemen, are housed in groups. An ample recreation ground has been prepared and a club-house is now being fitted up. The men in the shops draw better wages and live in finer houses than they ever knew in England and Scotland, but the white man's life on the West Coast, even at its best, is a life that few men would envy.

The men who come out are usually selected by the consulting engineers in England, and their term of service in Africa is only 12 months (half as long as the American missionaries stay); their passage is paid both ways and they are allowed to remain four months at home, on full pay. The following is a list of the positions filled by white men, with the salaries per year: General manager, $3,360; his clerk, $1,368; chief accountant, $2,400; his assistant, $1,440; senior assistant traffic manager, $1,920 + $384 duty allowance; his assistant, $1,440; traffic inspector, $1,272; two traffic officers, $1,416 and $1,080; locomotive superintendent, $2,789; his assistant, $1,824; locomotive foreman, $1,440; six fitters at an average of $1,152; three fitters and enginemen, average $1,180; boilermaker, $1,080; eleven enginemen, from $360 to $1,224; two blacksmiths at $1,176; maintenance engineer, $2,640 + $432 allowance; his assistant, $1,920 + $432 allowance; two draftsmen at $1,680; track inspector, $1,440; thirteen trackmen at $1,032. All of these are provided with free quarters.

Some of the Sierra Leone blacks receive salaries equal to those of many of the whites. Among the examples are the traffic supervisor, $1,440; junior draftsman, $1,440; storekeeper, $1,008; inspector of telegraphs, $864, and two enginemen at $864. But the natives receive no free quarters, no travel allowance and no four-months' leave.

Some adequate conception of the working efficiency of the European staff may be gathered from the following figures, which are for the latter half of 1907:

Number of white officials, 52.

Number of days on duty, 7,058 = 75.19 per cent.

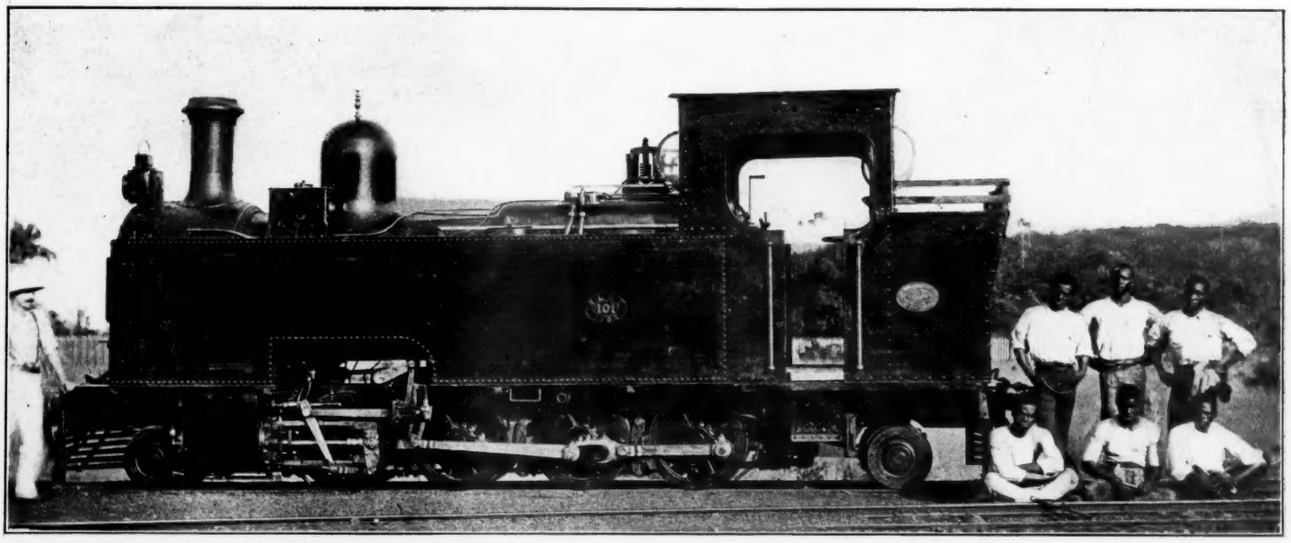
Number of days on leave, 2,111 = 22.48 per cent.

Number of days on sick list, 219 = 2.33 per cent.

Twenty-six (one-half) of the men were not sick at all; nine were sick for ten days or longer; the longest sick leave was for nineteen days.

No trains are run after dark, chiefly because they would not pay, but partly because of a playful native habit of placing stones on the rails.

Through trains from Freetown to the Baiima terminus, and vice versa, are run three times a week, leaving each end of the line on Tuesdays, Thursdays and Saturdays. Since they tie up at night, two days are required for the 220 miles, or four days for the round trip. The speed averages about thirteen miles an hour, including stops. On the alternate days—Mondays, Wednesdays and Fridays—a train leaves Freetown at 11:15 a.m., and runs as far as Moyamba (75 miles), requiring six hours for the trip. Returning, this train leaves Moyamba on Tuesdays, Thursdays and Saturdays. There is one daily train on the main line, leaving Freetown at 4.30 p.m., but it goes no farther than Songo (32 miles), where it is due at 7.10 p.m. It leaves Songo at 5.37 the next morning and gets into Freetown at 8.23 a.m. There is also an important weekly train, arranged especially to accommodate natives who want to market their produce. It is made up at Boia Junction, 64 miles inland, whence it departs on Mondays at 6.30 a.m., arriving in Freetown at 2.52 p.m. This market train does not leave Freetown on its return trip until Wednesday at 9.05 a.m., so the natives have nearly a day and a half in which to spend the few shillings received for their palm nuts, kola nuts or miscellany. This up-train reaches Boia Junction at 2.39 p.m. and connects with the tramway there. The market trains are the only ones which make no provision for first-class passengers.



**One of the Latest Locomotives on the Sierra Leone Railway.**

On certain days these short-run trains vary their schedules, but the changes are only of local interest. From the native's point of view these variations must be vexatious, for the primitive mind of the West African is not yet able to cope with the intricacies of that literary production known as the railway time-table. The irregularities may be partly responsible for the native habit of congregating at the station hours before train time, though the lack of a timepiece doubtless has something to do with it.

The service on the Mountain Railway is also very confusing, but as this section was constructed mainly for British officials the punishment is visited upon the offenders. The run of six miles requires half an hour, and there are nine stations, four of them being flag stations. Three daily down trains run from Hill Station into Freetown, and five irregular trains. Of the latter, one leaves the hill at 4.15 p.m. daily except Saturdays, and two run on Saturdays only—1.10 and 5.00 p.m. The fourth

leaves the hill at 6.55 p.m. on Mondays, Thursdays and Saturdays, while the fifth starts at 6.25 a.m. on Tuesdays, Wednesdays and Fridays. No trains at all are run on Sundays.

The peculiar genius of the Englishman is shown in the schedule of one of the trains. This is the regular 12.30 daily out of Freetown, but on Saturdays it is replaced by a train on another schedule starting just two minutes later!

Some of the minor regulations governing passenger traffic would provoke perspiration and profanity, if not rioting, should they be adopted by American roads. Here are a few:

(1) The ticket offices at all stations are opened thirty minutes before train time, but close five minutes before the train leaves. No tickets are sold thereafter and no one is admitted to the station platform without a ticket, though there may be an abundance of time in which to board the train.

(2) The friends of a passenger may not pass the gatekeeper to see him off without presenting platform tickets, costing two cents apiece.

(3) The baggage regulations are very restrictive. Hand baggage consisting of personal effects (but not merchandise) up to 24 lbs. may be carried free on one ticket. Beyond that weight the passenger is confronted with these excess charges:

Distance up to 76 miles, 8 pounds for 2 cents.

Distance up to 136 miles, 6 pounds for 2 cents.

Distance above 136 miles, 4 pounds for 2 cents.

An ordinary steamer trunk carried over the main line and back again would cost from $8 to $12.

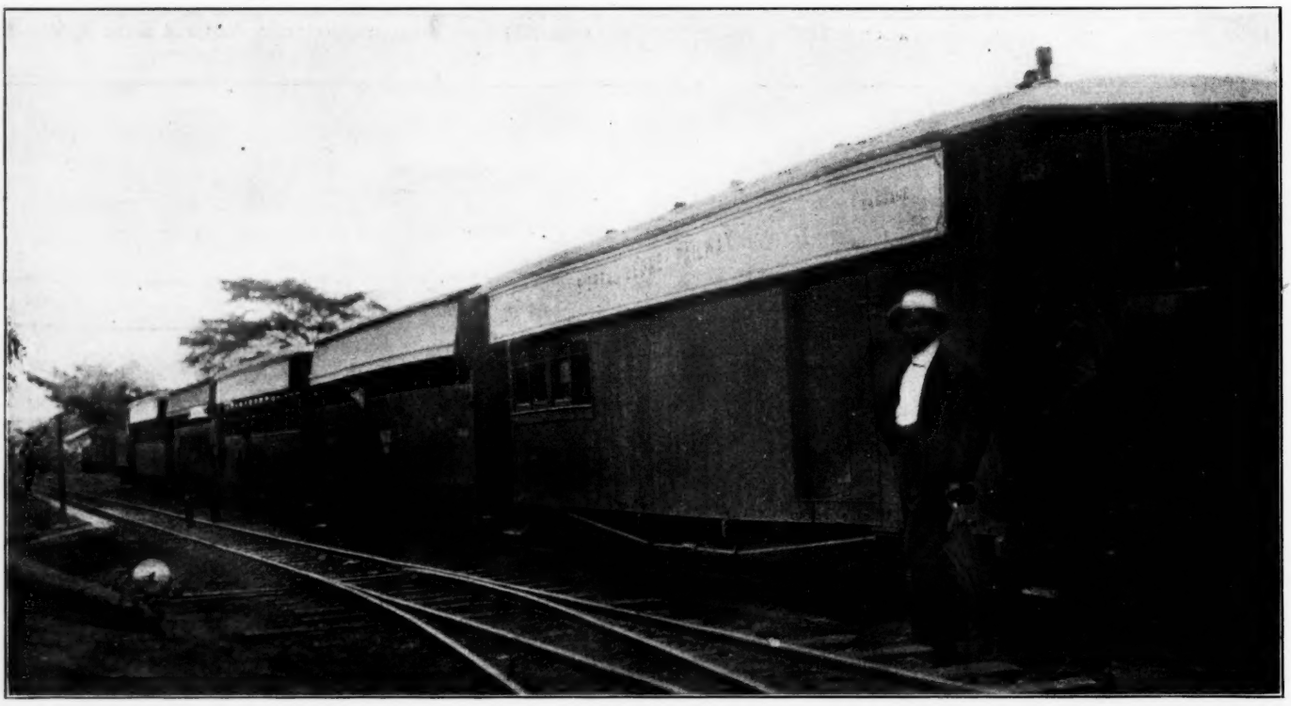
But the payment of the excess charges does not end the passenger's woes. His luggage must bear his name and address and be distinctly labeled to his destination. He must travel by the train that conveys it. If he intends leaving on an early morning train it must be presented for booking not later than 4.30 of the preceding day, yet the company does not guarantee that it will be forwarded by the morning train! The freight regulations are not so stringent.

At the present time freight is divided into four classes, one of which is called "Dangerous Goods." It includes absolute alcohol, mineral acids, ammunition, matches, rum and—most important of all—palm oil.

Class I embraces four native products—ivory, rubber, kola nuts and skins, and such imported goods as ale and wine, cigars and tobacco, millinery and perfumery, sewing machines and unspecified merchandise. Crockery and furniture, unless shipped at owner's risk, also belongs to this class.

Class II is much larger, but it contains only one native product, piassava, a fiber obtained from a species of palm and used in Europe for making baskets, etc. Most of the food products belong here, such as butter and cheese, preserved provisions, dried fruit, refined sugar and beer. This class also includes wearing apparel, boots and shoes, cotton and woolen goods, coarse furniture, machinery, hardware, glassware, iron building material, paint, tinware, earthenware, candles, kerosene, mineral waters and fine soap. Just why kerosene is not classed as "dangerous goods," along with rum, is not apparent.

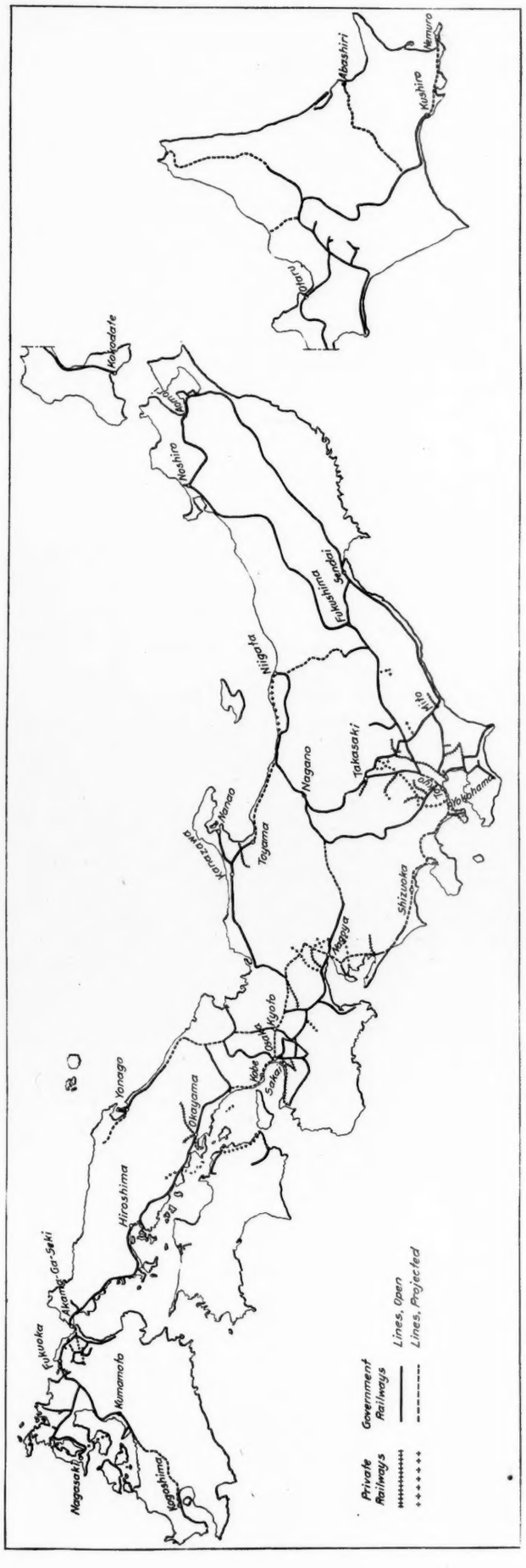
Class III embraces the majority of products shipped from upcountry and coarser grades of imported goods. The most important item is palm kernels, but the native coffee and cocoa, ginger, peanuts, lumber, stone and fruits are also included, along with empty barrels, casks and bottles. Of the imported merchandise, such articles as agricultural implements, bamboo furniture, books, iron castings, cement, cutlery, fish, flour, meat, nails, potatoes, salt and common soap belong in this lowest class. Live animals and birds are excluded from the freight classification and carried as "parcels" or express matter.



**Main Line Passenger Train.**

## IMPERIAL GOVERNMENT RAILWAYS OF JAPAN.

Under the railway nationalization law, the government of Japan has been since 1906 buying and taking over the operation of private railways. Since July 1, 1907, up to March 31, 1908, 15 lines had been bought, but the purchase price on only seven of them had been decided on, so that the total capitalization of government railways, as given in the report for the year ended March 31, 1909, does not include the sums that will be required to pay for eight railway lines. Of the total railway mileage in Japan, including Formosa, only 446 miles were owned by private companies in 1908; the remaining 4,455 miles were government railways. The average mileage operated of government railways in the fiscal year




Railways of Japan.

ended March 31 was 3,982 miles. This is greater by 1,832 miles than the mileage operated in 1907. The total amount invested in government railways in 1908 was $190,173,729.

The total revenues from operation, including the revenue from steamship lines, amounted in 1908 to $33,856,477. This is an increase of $16,440,289 over the previous year. The average receipts per mile of line totaled $8,397, an increase of $337 over the previous year. Of the total receipts but $417,774 were from the steamship business. Of the total revenues, freight furnishes about 44 per cent. and passengers about 55 per cent.

Total operating expenses amounted to $17,876,922. The operating ratio, therefore, in 1908, was 51 per cent. In 1907 operating expenses amounted to $9,123,800, and the operating ratio was the same in 1907 as in 1908. Maintenance, which corresponds roughly to maintenance of way and structures on American railways, cost $1,029 per mile of line operated in 1908 and $942 in 1907. Motive power and rolling stock, which apparently corresponds to maintenance of equipment, cost 18.1 cents per engine mile in 1908 and 19.9 in 1907. Transportation expenses totaled $5,324,024, as compared with $2,487,378. The total number of passengers carried in 1908 was 101,115,739, an increase of nearly 100 per cent. over the number of passengers carried in 1907. Of these passengers about 95,600,000 were third-class, 5,000,000 second-class, and the remaining 400,000 first-class. The average mileage traveled, however, by third-class passengers was 22; second-class passengers, 43; and first-class, 66; and the average receipts per passenger per mile were 1.799 cents first-class, 1.049 cents second-class, and 0.703 cents third-class, making the average receipts per passenger per mile, all classes, 0.746 cents.

During the year the passenger tariffs were revised on a number of roads and the fares were fixed on a mileage basis; less, however, being charged per mile when the journey was a long one than when it was a short one. The following table shows the charges per mile per third-class passenger:

| | | | |
|---|---|---|---|
| 1 to 50 miles | 0.83 cts. | 201 to 300 miles | 0.4 cts. |
| 50 " 100 " | 0.65 " | Above 300 " | 0.35 " |
| 100 " 200 " | 0.5 " | | |

The total tonnage of goods carried, which includes express, amounted to 18,300,000 in 1908, an increase of 10,700,000 over 1907; the average haul per ton being 78.8 miles in 1908. The average train load was 71 tons, an increase over the previous year of about three tons. This train load was carried in trains averaging a little over 20 cars; the total car mileage being 413,800,000 and the empty car mileage being 109,200,000. The average receipts per ton per mile amounted to 0.676 cents.

On the Japanese government railways there were but four passengers killed through accidents, 10 through negligence and five through suicide in 1908. There were 10 employees killed in accidents, 93 killed through negligence and one suicide. The collision of passenger or freight trains with locomotives or trains that were performing switching service contributed more than any other one cause to the total accidents on the Japanese railways. One of these accidents is described as follows: "On April 8, 1907, at the Nagoya station, a yardman needlessly moved a shunting engine as No. 8 passenger train was about to move into the yard, and came against the engine that had stood in the way. The locomotive and two passenger cars were overturned, causing injuries to eight passengers and four officials. The train was temporarily recomposed with the cars that were intact and started on its way."

The railway stores fund, to which are charged expenses for materials apparently for renewals, replacements and additions and betterments, showed receipts in 1908 of $30,714,997, and disbursements of $30,640,077. Contracts for the purchase of railway stores amounted to $35,380,000, of which $27,450,000 was paid for home products and $7,930,000 for foreign products. The purchase of home products was about twice as great in 1908 as in 1907, and the purchase of foreign products was nearly four times as great.

# General News Section.

The Southern Pacific is to build for its employees at San Luis Obispo, Cal., a club house, costing $30,000.

The bridge of the Rock Island across the Cimarron river, Okla., 900 ft. long, was carried away by a flood August 18.

A stockholder of the Illinois Central has filed a bill in court at Chicago to restrain the road from allowing the display of advertising in its stations or cars, or on its right of way.

At Northampton, Mass., the freight house and yards of the New York, New Haven & Hartford have been abandoned and that company will be a joint occupant with the Boston & Maine in the house and yards of the B. & M.

In a fire at Long Island City, N. Y., on the night of August 20, the Long Island Railroad lost five baggage cars, two mail cars, a hospital car and a pay car; and a dozen other cars were badly damaged; loss $75,000. Loss on express shed, $5,000.

At Sioux City, Iowa, petitions are being circulated among the employees of the Illinois Central, which are to be sent to President Taft, to Congress, to the Interstate Commerce Commission and to State legislatures, asking that the railways be not hindered from increasing freight rates.

L. L. Whitman, who arrived in San Francisco on the night of August 18, reported that he had traveled to that city from New York in an automobile in 10 days, 15 hours, 12 minutes and one second; this is four days, 11 hours better than the best previous time, which was made by Mr. Whitman four years ago.

On Thursday, August 18, a train of 120 coal cars was run over the Pennsylvania from Altoona to Harrisburg, 131 miles, at the rate of more than 20 miles an hour. The cars were all of 100,000 lbs. capacity each, and the train was hauled by an engine of class H-8, the same that made the record with 105 cars a year ago.

The Interstate Commerce Commission has established at Chicago a branch office for its bureau of statistics and accounts, which will be headquarters for between 40 and 50 of the special examiners assigned to the duty of making periodical examinations of the railways' accounts. The office is on the 14th floor of the Steger building and is in charge of Examiner F. W. Sweney.

The Pennsylvania Railroad has increased the pay of its telegraphers 6 per cent. This, added to the 6 per cent. which was granted all employees last spring, gives the operators an increase of about 12 per cent. The Lake Shore & Michigan Southern has increased the pay of its locomotive enginemen. The Central Vermont has increased the wages of locomotive enginemen about 20 per cent.

The borough of Lansdowne, Pa., has just appropriated for the paving of a street the sum of $50,000, which was furnished by the Delaware County & Philadelphia Electric Railway Co.; and the railway company gets nothing in return. The company intended to build a line to connect Lansdowne with 69th street, Philadelphia, but this intention was never carried out and now the sum named, which was deposited with the borough as an evidence of good faith, is forfeited to the borough.

The Capital Traction Co., operating street railways in Washington, D. C., has distributed among 311 employees the sum of $18,825 in rewards for good service during the year ending July 1 last. Of the 624 conductors and motormen in the service of the company a year ago, 382 were in the classified service. Of these, 67 dropped out during the year, leaving the number in service July 1, 1910, 315; and only four of these failed to receive a bonus of some amount. Seventy-nine men received premiums who had been in the service only one year, notwithstanding the fact that six reprimands would have disqualified them.

### Two Views.

R. W. McEwan, president of the Whippany Railroad [now the Morristown & Erie], which runs from Essex Fells, N. J., and Caldwell to Morristown, takes umbrage at recent remarks of some of the patrons of the road. The road has but one train, consisting of a locomotive and one car, which shuttles back and forth between Essex Fells and Morristown all day long. [This is an exaggeration. The trains shown on the time-table are Nos. 573, 511, 481, 581, 510, 470, 524, 582 and 484.] Patrons say that the passenger car in use was built before the civil war. Mr. McEwan admits that the coach is of old design, but says it is in good condition, clean and comfortable. The small locomotive is of the Forney type, 30 tons in weight, and Mr. McEwan says it was designed especially (?) for service on his road and is as fine a piece of machinery as runs on any rails. He says that it stops and starts quicker than an electric car, which enables the train to stop between stations to pick up passengers who otherwise would have long walks to the stations. The road has a second engine, which hauls a freight train.—*New York Times.*

### Train Resistance Experiments on the Santa Fe.

Vice-president J. W. Kendrick, of the Atchison, Topeka & Santa Fe, is this week making a trip with a special train of 14 passenger cars and a dynamometer car over the whole of the main line from Chicago to Los Angeles, with a view to getting exact data as to train resistance on every division of the line. The train left Chicago on Monday night at 10 o'clock. Mr. Kendrick plans to eliminate the use of helping engines wherever possible, and he is taking this trip to ascertain the exact power needed on every grade. Tests will be made also on the return trip from Los Angeles to Chicago.

### Strikers Reject Plan of Officers.

The Baltimore & Ohio S. W. machinists on strike at the shop in Washington, Indiana, have rejected the proposition to return to work offered by Vice-President Potter by a vote of 104 to 2. This is regarded a hard blow to the business interests of Washington. Faith was broken with them, the business men assert, and they are in no mood to further countenance the strike which they have worked diligently to terminate. The proposition as offered by Mr. Potter was that preference would be shown the strikers in the employment of men, when applications for places were made; that no difference between union and non-union men would be recognized and no grievance committee would be recognized. Some of the men wanted to accept the proposal because they are needy and the strike benefits are not sufficient to sustain their families.

### Carrying Out the Commission's Rule.

Two dollars and thirteen cents is the amount of damages asked by the Pennsylvania Railroad in a suit filed at Chicago in the municipal court this week against George W. Milligan, 169 Wabash avenue, a manufacturer's agent. The basis of the suit is as follows: "Plaintiff's claim is for railway fare due from the defendant to the plaintiff for carriage of the defendant from North Philadelphia to Jersey City on January 4, 1910." The costs of filing the suit are $3. If Milligan demands a jury trial there will be a charge of $6 more.

### Proposed Railway Legislation in Texas.

Governor T. M. Campbell, of Texas, issued a call on August 17 for a special session of the state legislature to be convened on August 18. Among the subjects suggested by the governor for action by the legislature are the following:

Legislation to prescribe the conditions upon which the purchaser of a railway may organize a new corporation, and regulating the stock and bonds of the new corporation, and providing for the protection of holders of all claims against the old corporation. The enactment of laws defining bills of lading and the word "carriers," and providing that it shall be the duty of common carriers and their officers and agents to issue negotiable bills of lading and straight, or non-negotiable, bills of lading at the request of the shipper, between places to be

prescribed by law, and making all negotiable bills of lading negotiable by endorsement and delivery in the same manner as bills of exchange and promissory notes, and prohibiting the placing on the negotiable bills of lading of any terms which would in any manner limit their negotiability. Legislation requiring the erection and maintenance of buildings for protecting from inclement weather employees engaged in repairing cars and other railway equipment. A law reducing passenger fares to two cents a mile.

### Red Ball System of Handling Freight.*

One of the important and interesting phases of "teamwork" finds expression on the Atchison, Topeka & Santa Fe in the red ball system. Due to the growth in business and mileage of the system and its splitting up into grand operating divisions under several general managers, it became essential that some better plan for keeping track of important freight in its movement over the system should be devised than formerly existed. To this end, in 1899, C. W. Kouns, then superintendent of transportation, conducted a number of experiments with the object of perfecting a plan to accomplish this result, and in this way the red ball system had its birth.

When a red ball train is made up at Los Angeles, for instance, the agent gives each of the cars in this train a red ball symbol and number for the purpose of thereafter designating this car in all movements to its destination.

Each red ball billing station is given a letter or letters and is assigned a series of numbers to be used in numbering the envelopes carrying the waybills for cars loaded with red ball freight.

A special red ball card, which is a familiar sight to every employee—the large red ball on the white card—is attached to every car of red ball freight, one on each side. Immediately after a red ball train leaves the station the agent telegraphs a report to the red ball bureau in the office of the car accountant.

When the telegram is received at the red ball office a duplicate train is made up by using small wooden pegs. On top of each is pasted a label containing the symbol letter and number as it appears on each car in the road train. These pegs are stuck in a board which represents a train, and the "trains" are hung on a large geographical board.

On the arrival of a red ball train at a terminal point a freight arriving report is telegraphed. If this report is blank except the heading it is understood that all cars from the initial terminal are in the train. If any red ball cars have been picked up or set out between terminals full information concerning each car is given.

This system is kept in proper working order by the enforcement of the rule that all reports must be in the red ball office within an hour of the departure and arrival of trains. In this way accurate information can be furnished traffic department officials and patrons of the company promptly as to the movement of trains generally or of any particular car.

The red ball system of moving and tracing freight has been of great value both to the Santa Fe and its patrons.

The traffic department has found it of most valuable assistance in the solicitation of business and for the special information which patrons are able to receive regarding the movement and location of cars. Through the careful working of this system the operating department has been given great assistance in bringing quickly to light any improper handling of business along the line. In this respect the red ball system has exerted a great influence in keeping every man alert to the great necessity of moving the business in its proper order. Every man upon whom the moving of freight depends knows that if a single car is not properly attended to it will show up on the board like a sore thumb.

The system does away entirely with indiscriminate tracing of freight by officials, agents or anyone who might desire information. Before this system was put into effect it was no uncommon thing for an agent to have four or five telegrams from different people about the same car. Now if any information is wanted application is made to the red ball office.

*From the *Santa Fe Employees' Magazine*. The Santa Fe system of keeping track of the movement of fast freight was described in the *Railroad Gazette*, August 25, 1905.

### Estimated Blast Furnace Capacities.

According to its *Bulletin*, the Iron and Steel Association, in 1898, estimated the annual capacity of the then live blast furnaces of the United States at 34,000,000 tons. From November 1, 1907—the time of taking the statistics upon which the above estimate was made—to June 30, 1910, 12 furnaces, representing an annual capacity of 287,000 tons, were abandoned or dismantled, and 35 furnaces, representing 4,468,000 tons annually, were completed. Also, 16 furnaces, designed for an annual capacity of 2,083,500 tons, were building June 30, 1910. During this same period a number of furnaces, classified as active in the estimate, were equipped with additional blowing machinery, rebuilt or re-equipped, which resulted in an estimated annual capacity increase of 925,000 tons. On the other hand, a number of furnaces which had been listed as active were really inactive, the estimated annual capacity of which is 1,795,000 tons. The summary of these details shows that the approximate live capacity of blast furnaces of the United States at the end of 1911 will be 40,228,400 tons. The summary is as follows:

| Furnaces—gross tons | Annual capacity. |
|---|---|
| Completed furnaces on November 1, 1907 | 34,833,900 |
| Abandoned or dismantled since November 1, 1907 | 287,000 |
| Remainder | 34,546,900 |
| Completed since November 1, 1907 | 4,468,000 |
| Total | 39,014,900 |
| Rebuilt and enlarged since November 1, 1907 | 925,000 |
| Total | 39,939,900 |
| Furnaces idle since November 1, 1907 | 1,795,000 |
| Approximate live capacity June 30, 1910 | 38,144,900 |
| To be completed in 1910, after June 30 | 728,500 |
| Building furnaces to be completed in 1911 | 1,355,000 |
| Approximate live capacity at end of 1911 | 40,228,400 |

### Another Note on Politeness.

One London store has issued printed instructions to its employees containing the following:

Our employees are reminded that whilst serving customers they are expected to wear a commercial smile.

The "commercial smile" is intended, no doubt, to be a happy blend of supreme confidence in the quality of the goods offered with a benevolent desire not to allow the customer to miss the greatest opportunity of his life.—*New York Evening Post.*

### Arrests in Connection with Illinois Central "Graft" Scandal.

Three arrests were made in Chicago on August 19 in connection with the charges of extensive "grafting" in the car repair department of the Illinois Central. Those arrested were Frank B. Harriman, formerly general manager, who resigned on March 15; Charles L. Ewing, formerly general superintendent of the lines north of the Ohio river, who resigned on April 1, and John M. Taylor, formerly general storekeeper, who resigned on May 1. The warrants charge conspiracy to obtain money by false pretenses. Two charges are being made against each man. Each gave bond for $10,000 to answer for each alleged offense.

The arrests followed a conference in the office of Chief Justice Olson of the municipal court, which was attended by Chief Justice Olson, Judge Bruggemeyer, Assistant State's Attorney John M. Barnes, President Harahan, of the Illinois Central, and Murray Nelson, Jr., and Walter L. Fisher, of counsel for the road. The informations on which the warrants were issued were signed by President Harahan.

The alleged frauds against the Illinois Central frequently have been referred to in these columns. The methods used in carrying them out, it is said, was for certain of the officers of the railway to arrange with car repair companies to pay the latter excessive prices for the repair of cars and then in various ways to divide the profits resulting from the frauds between those officers of the road and the repair companies. No official statement has ever been made as to the exact aggregate amount of the frauds, but civil suits which have been brought against the car companies indicate that the management of the road believes they exceeded $1,000,000.

### Progress of Electrification in Sweden.

Reports of the progress of electrification in foreign countries are increasing. While we in America are timorously approaching the issue and are hesitating at the initial step, up in Lapland, within the Arctic circle, the Swedish government is pushing ahead with its far reaching plans for electrifying the complete State Railway system.

The government controls water rights representing a minimum output of 70,000 h.p. When developed in conjunction with regulation of the lakes in the Great Lule river, this will be increased to about 300,000 h.p. The government proposes establishing a hydro-electric plant at the present time of two generating units of 12,500 h.p. capacity each to supply the energy for propelling the trains. In addition, there will be a reserve unit of the same capacity and two 12,500 h.p. units for furnishing power for industrial purposes.—*Electric Trunk Line Age.*

### "Railroad Day" at Denver.

August 20 was "railroad day" at Denver, Colo. A big celebration was given under the auspices of the American Railroad Employees' and Investors' Association. In the morning a long procession, composed of men employed in every branch of railway service, marched through the city's streets, and in the afternoon and evening there were field sports and public speeches at one of the parks. The speakers were W. W. Hall, president of the local branch of the Employees' and Investors' Association; P. H. Morrissey, president of the national organization; Mayor Speer of Denver; Governor Shafroth of Colorado; A. D. Parker, vice-president of the Colorado & Southern; and C. H. Bristol, division superintendent of the Atchison, Topeka & Santa Fe at Pueblo. Mayor Speer delivered a vigorous denunciation of political demagogues who are using the railway question as a means to get into office. He said:

"I do not want to be understood as trying to defend the bad management of some railways. They have made it necessary to pass laws to correct evils and abuses, put into operation by themselves. The professional reformer, ever alert, comes forward, and where one or two bars should be firmly put up, he wants to build a fence which no one could cross and would put most of our railways in the hands of a receiver." Mr. Morrissey in his talk described the purposes of the association of which he is the head. He dwelt on the mutuality of interests of railways and their employees.

### Chicago Signal Club.

The Chicago Signal Club, which was organized on August 1 by members of the signal departments of the railways having headquarters in Chicago, held its first regular meeting on Monday, August 22, at the office of *The Signal Engineer,* 402 Plymouth Building, Chicago. The following subjects were discussed: Typical vs. continuous plans for automatic block signal work; comparative efficiency of the time lock and the electric lock from the standpoint of the maintainer; and how much territory a maintainer can cover efficiently under various conditions of track and signals.

The Chicago Signal Club was organized to bring those engaged in signal work in Chicago and vicinity together at intervals for discussion and study of the problems constantly arising in their work and for the interchange and comparison of ideas, experience and opinions. The next meeting will be held on Tuesday, September 6, at 7 p.m., at the office of *The Signal Engineer.* The subjects to be discussed at that meeting will include mechanical towers, lead-outs, wire numbering and the maintenance of potash batteries.

### American Society of Engineering Contractors.

The annual convention of this society will be held in St. Louis, Mo., September 27-29, with headquarters at the Coliseum. Papers will be presented as follows: "Dam Construction for City Water Supplies," by J. M. Goldsboro and E. Wegmann, both of New York City, and "Work Preliminary to Street Paving and Road Work," by George C. Warren, Boston, Mass. A banquet will be held and several sightseeing trips will be made to important engineering works in and around St. Louis.

## MEETINGS AND CONVENTIONS.

*The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.*

Air Brake Association.—F. M. Nellis, 53 State St., Boston, Mass.
American Association of Demurrage Officers.—A. G. Thomason, Scranton, Pa.; next meeting June 22, 1911; Niagara Falls, N. Y.
American Association of General Passenger and Ticket Agents.—C. M. Burt, Boston, Mass.; next meeting, St. Paul, Minn.
American Ass'n of Local Freight Agents' Ass'n.—G. W. Dennison, Penna. Co., Toledo, Ohio.
American Ass'n of Railroad Superintendents.—O. G. Fetter, Carew Bldg., Cincinnati, Ohio; Sept. 16; St. Louis.
American Railway Association.—W. F. Allen, 24 Park Place, New York; semi-annual, Nov. 16; St. Louis. Mo.
American Railway Bridge and Building Association.—C. A. Lichty, C. & N. W., Chicago; Oct. 18; Fort Worth, Tex.
American Railway Engineering and Maint. of Way Ass'n.—E. H. Fritch, Monadnock Bldg., Chicago; March 21-23, 1911; Chicago.
American Railway Industrial Association.—G. L. Stewart, St. L. S. W. Ry., St. Louis, Mo.; May 9, 1911; Detroit, Mich.
American Railway Master Mechanics' Association.—J. W. Taylor, Old Colony Building, Chicago.
Am. Railway Tool Foremen's Ass'n.—O. T. Harroun, Bloomington, Ill.
American Society for Testing Materials.—Prof. Edgar Marburg, Univ. of Pennsylvania, Philadelphia.
Am. Soc. of Civil Engs.—C. W. Hunt, 220 W. 57th St., N. Y.; 1st and 3d Wed., except July and Aug.; annual, Jan. 18-19, New York.
Am. Society of Engineering Contractors.—D. J. Haner, 13 Park Row, New York,; annual, Sept. 27-29; St. Louis, Mo.
American Society of Mechanical Engineers.—Calvin W. Rice, 29 W. 29th St., N. Y.; annual, Dec. 6-9; New York.
American Street and Interurban Railway Ass'n.—H. C. Donecker, 29 W. 39th St., New York; Oct. 10-14; Atlantic City.
Association of Am. Ry. Accounting Officers.—C. G. Phillips, 143 Dearborn St., Chicago; April 26, 1911; New Orleans, La.
Association of Railway Claim Agents.—J. R. McSherry, C. & E. I., Chicago; May, 1911; Montreal, Can.
Association of Railway Electrical Engineers.—G. B. Colegrove, I. C. R.R., Chicago; annual, Sept. 27-30; Chicago.
Association of Railway Telegraph Superintendents.—P. W. Drew, 135 Adams St., Chicago; June 19, 1911; Boston.
Ass. of Trans. and Car Acc. Officers.—G. P. Conard, 24 Park Place, N. Y.; Dec. 13-14, Chicago; June 20-21, 1911, Cape May City, N. J.
Canadian Railway Club.—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tues. in month, except June, July and Aug.; Montreal.
Canadian Society of Civil Engs.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays; Montreal; annual, last week January.
Car Foreman's Association of Chicago.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month; Chicago.
Central Railway Club.—H. D. Vought, 95 Liberty St., New York; 2d Friday in January, March, May, Sept. and Nov.; Buffalo.
Engineers' Society of Penn.—E. R. Dasher, Box 704, Harrisburg, Pa.
Engineers' Society of Western Pennsylvania.—E. K. Hiles, 803 Fulton bldg., Pittsburgh; 1st and 3d Tues.; annual, Jan. 17, 1911, Pittsburgh.
Freight Claim Association.—Warren P. Taylor, Rich., Fred. & Pot. R.R., Richmond, Va.; 20th annual, June 21, 1911; St. Paul, Minn.
General Superintendents' Ass'n of Chicago.—H. D. Judson, 209 Adams St., Chicago; Wednesday preceding 3d Thursday; Chicago.
International Master Boiler Makers' Association.—Harry D. Vought, 95 Liberty St., New York; next convention, Omaha, Neb.
Internat'l Ry. Fuel Ass'n.—D. B. Sebastian, La Salle St. Station, Chicago.
International Railway General Foremen's Association.—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn.
International Railway Master Blacksmiths' Ass'n.—A. L. Woodworth, Lima, Ohio.
International Railway Congress.—Executive Committee, rue de Louvain, 11 Brussels; 1915, Berlin.
Iowa Railway Club.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August; Des Moines.
Master Car Builders' Association.—J. W. Taylor, Old Colony Bldg., Chicago.
Master Car and Loco. Painters' Ass'n of U. S. and Canada.—A. P. Dane, B. & M., Reading, Mass.; annual, St. Louis, Sept. 13-16.
New England Railroad Club.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month. ex. June, July, Aug. and Sept.; Boston.
New York Railroad Club.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August; New York.
North-West Railway Club.—T. W. Flanagan, Soo Line, Minn.; 1st Tues. after 2d. Mon., ex. June, July, August; St. Paul and Minn.
Northern Railway Club.—C. L. Kennedy, C., M. & St. P., Duluth; 4th Saturday; Duluth, Minn.
Omaha Railway Club.—A. H. Christiansen, Barker Blk.; Second Wed.
Railway Club of Kansas City.—C. Manlove, 1008 Walnut St., Kansas City; 3d Friday in month; Kansas City.
Railway Club of Pittsburgh.—J. D. Conway, Pittsburgh, Pa., 4th Friday in month, except June, July and August; Pittsburgh.
Railway Signal Association.—C. C. Rosenberg, 12 North Linden St., Bethlehem, Pa.; annual, Oct. 11-13; Richmond, Va.
Railway S'keepers' Ass'n.—J. P. Murphy, Box C. Collinwood, O.; annual, May, 1911.
Richmond Railroad Club.—F. O. Robinson; 2d Monday; Richmond.
Roadmasters' and Maintenance of Way Ass'n.—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.; annual, Sept. 13-16; Chicago.
St. Louis Railway Club.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug.; St. Louis.
Society of Railway Financial Officers.—C. Nyquist, La Salle St. Station, Chicago; Oct. 25 and 26; Hotel Chamberlin, Old Point Comfort, Va.
Southern Association of Car Service Officers.—E. W. Sandwich, A. & W. R. Ry., Montgomery, Ala.; annual, Oct. 20; Atlanta.
Southern & Southwestern R.R. Club.—A. J. Merrill, Prudential Bldg., Atlanta; 3d Thurs., Jan., Mar., July, Sept. and Nov.; Atlanta.
Toledo Transportation Club.—L. G. Macomber, Woolson Spice Co., Toledo; 1st Sat.; annual, May 6, 1911, Toledo.
Transportation Club of Buffalo.—J. M. Sells, Buffalo; 1st Sat. after 1st Wed.; annual, Dec. 13.
Traffic Club of New York.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August; New York.
Train Despatchers' Ass'n of America.—J. F. Mackie, 7042 Stewart Ave., Chicago; annual, June 20, 1911; Baltimore.
Traveling Engineers' Association.—W. O. Thompson, N. Y. C. & H. R., East Buffalo.
Western Canada Railway Club.—W. H. Rosevear, P. O. Box 1707, Winnipeg; 2d Monday, except June, July and August; Winnipeg.
Western Society of Engineers.—J. H. Warder, Monadnock Bldg., Chicago; Wednesdays, except July and August; Chicago.

# Traffic News.

The Ohio Shippers' Association has petitioned the state railway commission to require the railways to give shippers 72 hours in which to load and unload cars of over 66,000 lbs. capacity.

The Western Pacific announces an eastbound fast freight schedule of 72 hours from San Francisco to Salt Lake City, 921 miles; and one fruit train has been run through in 28 hours, or six hours better than the best passenger schedule.

The Grays Harbor & Puget Sound, from Centralia, Wash., to Hoquiam, 60 miles, has been finished and opened for traffic as far as South Aberdeen. The line is to be used jointly by the Oregon & Washington and the Chicago, Milwaukee & Puget Sound.

A press despatch from Little Rock says that the railways of Arkansas will on September 1 restore passenger rates to the basis of three cents a mile. The agreement under which a rate of 2.5 cents has been in use experimentally will expire at the end of August.

The chairman of the Southwestern tariff committee announces that the lines in that territory intend to make an advance of one cent per 100 lbs. in the rates on lumber from southern producing points to places in the Central Freight Association and Trunk Line territories.

The Iowa state railroad commission, acting in conjunction with the attorney-general of the state, has complained to the Interstate Commerce Commission that towns in the interior of Iowa have to pay excessive rates on freight from places east of the Mississippi river.

The Southern Pacific on August 18 pleaded guilty to a charge of discrimination in freight rates between Verdi, Nev., and San Jose, Cal., and was fined $1,000 by the federal court. A like fine was imposed on the California Pine Box & Lumber Company, which pleaded guilty to having procured an interstate shipment of freight at less than the published rates.

Fred M. Dickson, Master in Chancery of the federal court at St. Paul, Minn., has filed a report holding that the rate of 45 cents per 100 lbs. fixed by the Interstate Commerce Commission on lumber moving from the Pacific coast to St. Paul is unreasonably low, and that the rate should be not less than 50 cents. The case will be argued before the United States circuit court on September 15.

A press despatch from Springfield says that the Illinois State Railroad Commission will at once issue an order, requiring the express companies of the State to make a general horizontal reduction of 10 per cent. in their rates October 1. The commission investigated express rates some weeks ago. It is expected that the express companies will resist the action of the commission and get the matter taken into the courts.

According to the government statistical bureau, the total amount of freight carried by vessels on the Great Lakes in the month of June was 13,603,516 gross tons, which is the heaviest movement ever recorded. It is 16 per cent. greater than the tonnage of June, 1907. For the six months of this year, the aggregate movement was 30,448,065 gross tons. The largest gain over preceding years is in iron ore from Lake Superior.

Press despatches from Omaha report the detection of extensive frauds on the Chicago, Burlington & Quincy Railroad by its conductors and ticket sellers. The only particulars given are that the station agent at Sioux City and five conductors have been discharged because of the irregularity of the sale and use of tickets. The reports say that conductors taking up tickets returned them, unpunched, to be sold from the office a second time.

The Grand Trunk Pacific announces that the section of its line which was built by the government, from Winnipeg eastward to Superior Junction, 280 miles, will be opened for business September 1. Trains can then be run from Fort William, on Lake Superior, westward to Edmonton, about 1,100 miles. The road is completed to Edson, 146 miles beyond Edmonton. The company is thus going to be in a position to carry to Lake Superior grain harvested this year in western Canada.

The principal railways carrying cement from factories in Oklahoma and Kansas to points in Colorado, California and other western states, complying with a suggestion from the Interstate Commerce Commission, have suspended until November 1 new tariffs which they had prepared, to take effect September 1, making advances in the rates on cement, ranging from 2½ cents per 100 lbs. to 5 cents. The cement manufacturers claim that the new rates would destroy their business.

The difficulty of satisfying jobbers who complain about freight rates is illustrated by the fact that the shippers at Spokane are now voicing their complaints regarding the decision recently rendered by the Interstate Commerce Commission in the Spokane rate case. The commission in this case tentatively ordered reductions in the rates which to the traffic officers of the railways seemed very drastic, but the shippers at Spokane have told the commission that in their judgment it has not yet done enough for them. Which tends to verify the prediction repeatedly made by traffic officers that no matter what the commission did regarding rates to the western intermountain country the complaining communities would never be satisfied.

The Southern Railway announces that in conformity to the agreement which was made at White Sulphur Springs, W. Va., July 19, it will appoint a validation officer, to certify to the signatures of the freight agents of the company on bills of lading issued for cotton going to foreign countries. Certificates will be fastened to the bills of lading to which they apply, and each bill of lading will bear the number of the certificate issued in connection with it.

A press despatch from London says that the American Express Company has informed the banks in England that it stands ready to guarantee the genuineness of bills of lading for cotton where such bills are transmitted through the express company. From information given out in New York in connection with comments on this despatch, it appears that the express company has been assured of the co-operation in the proposed arrangement of many trust companies and banks in the Southern states.

The latest "Farmers' Special" of the Pennsylvania is one of three cars which is now making a 15 days' trip over the lines of the Pennsylvania in the state of Indiana to teach the farmers how to improve their methods of cultivating wheat. The lecturers are from the Purdue Experiment Station. Lectures are to be given at 156 stations, two of 30 minutes each at each station. This week, the Pennsylvania is running a farmers' instruction train also in the state of Ohio, where 25 stops will be made, with three 20-minute lectures at each stop.

The Southern Railway is running "Farmers' Specials" in Virginia, the lecturers being professors from the State Department of Agriculture. In Oklahoma, the Commissioner of Agriculture of the state is to make a lecturing trip of about 12 days, which will include 95 towns, on a train furnished by the Rock Island road. This is called a "Better Wheat Train." In Missouri, the St. Louis & San Francisco is to run a "Good Roads Train," leaving St. Louis September 12. This train will be in charge of the State Highway Engineer and will have three platform cars, containing exhibits of road making material and machinery.

### Mann-Elkins Act Now in Effect.

Most of the provisions of the Mann-Elkins act amending the act to regulate commerce went into effect on August 18. The provision giving the Interstate Commerce Commission power to suspend advances in rates, of course, went into effect when President Taft signed the bill on June 18. The entire act is now in force. The day the new law went into effect the Western Union Telegraph Company sent out a notice saying that under the law it became illegal for that company to issue franks for the transmission of telegrams except to persons specifically mentioned in the law, and that it likewise became unlawful, except for those mentioned by the law, to use such franks. The class of persons to whom telegraph franks and reduced rates may still be granted are those to whom the law allows free and reduced transportation to be given by the railways.

## REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF JUNE, 1910.

(See also issues of August 5, 12, and 19.)

| Name of road. | Mileage operated; end of period. | Operating revenues | | | Operating expenses | | | | | | Net operating revenues (or deficit). | Outside operations, net. | Taxes. | Operating income (or loss). | Increase (or dec.) comp. with last year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Maintenance | | | | | | | | | | |
| | | Freight. | Passenger. | Total, inc. misc. | Way and structures. | Of equipment. | Traffic. | Transportation. | General. | Total. | | | | | |
| Alabama Great Southern | 309 | $238,399 | $100,411 | $370,951 | $67,122 | $66,723 | $9,834 | $109,658 | $8,056 | $261,393 | $109,558 | —294 | $11,522 | $97,742 | $31,207 |
| Ann Arbor | 301 | 94,067 | 38,444 | 142,927 | 23,669 | 16,326 | 3,877 | 47,758 | 8,180 | 99,810 | 43,117 | —1,509 | 12,330 | 29,278 | —25,923 |
| Atlantic & St. Lawrence | 167 | 72,717 | 25,820 | 109,395 | 38,616 | 18,453 | 4,213 | 30,208 | 5,307 | 96,797 | 12,598 | ..... | 31,717 | —19,119 | —52,460 |
| Canadian Pacific Lines in Maine | 233 | 29,839 | 18,354 | 54,281 | 32,499 | 7,775 | 5,648 | 23,148 | 3,686 | 72,756 | —18,475 | ..... | 5,717 | —24,192 | —4,547 |
| Central New England | 278* | 194,657 | 31,985 | 241,160 | 44,094 | 20,703 | 2,673 | 75,325 | 3,147 | 145,942 | 95,218 | ..... | 13,375 | 81,843 | 55,807 |
| Central of Georgia | 1,916 | 522,345 | 255,306 | 861,574 | 170,448 | 187,281 | 38,643 | 289,721 | 42,160 | 728,253 | 133,321 | 6,861 | 45,205 | 94,977 | —61,962 |
| Cincinnati, New Orleans & Texas Pacific | 337 | 632,118 | 126,792 | 798,921 | 94,351 | 112,955 | 19,542 | 212,523 | 19,922 | 459,293 | 339,628 | —86 | 13,315 | 326,227 | 84,491 |
| Colorado & Southern | 1,248 | 610,517 | 129,369 | 812,794 | 150,672 | 135,171 | 14,084 | 248,881 | 22,349 | 571,157 | 241,637 | —9,329 | 71,167 | 161,141 | 15,262 |
| Detroit, Grand Haven & Milwaukee | 190 | 88,955 | 46,912 | 156,016 | 40,154 | 24,473 | 7,112 | 67,230 | 7,098 | 146,067 | 9,949 | 4 | 6,108 | 3,845 | —29,755 |
| Georgia Southern & Florida | 395 | 93,854 | 55,184 | 168,481 | 18,718 | 30,364 | 6,621 | 75,461 | 8,673 | 139,837 | 28,644 | ..... | 8 333 | 20,311 | —9,466 |
| Grand Trunk Western | 336 | 336,496 | 163,996 | 541,539 | 55,552 | 79,015 | 20,045 | 212,322 | 17,130 | 384,065 | 157,474 | —987 | 59,277 | 97,210 | —36,406 |
| Gulf & Ship Island | 307 | 112,880 | 30,411 | 152,956 | 22,965 | 21,958 | 2,386 | 49,632 | 8,231 | 105,172 | 47,784 | ..... | 5,074 | 42,710 | 30,204 |
| Hocking Valley | 350 | 599,312 | 71,459 | 695,994 | Cr. 38,659 | 94,742 | 7,524 | 204,690 | 93,169 | 361,466 | 334,528 | 23,450 | 28,705 | 329,273 | 140,391 |
| Illinois Central | 4,550 | 2,949,915 | 1,009,082 | 4,613,080 | 610,204 | 1,062,639 | 99,924 | 1,659,787 | 158,400 | 3,590,954 | 1,022,126 | 5,106 | 172,863 | 854,369 | —424,956 |
| Indianapolis Southern | 179 | 68,431 | 20,176 | 91,362 | 19,464 | 13,973 | 992 | 34,047 | 1,044 | 69,520 | 21,842 | ..... | 6,711 | 15,131 | 5,210 |
| Kanawha & Michigan | 175 | 215,086 | 26,828 | 247,300 | 28,763 | 46,234 | 2,101 | 68,971 | 1,360 | 147,429 | 99,871 | —3 | 10,776 | 89,092 | 81,577 |
| Lehigh Valley | 1,433 | 2,736,801 | 416,932 | 3,252,346 | 179,529 | 608,353 | 85,820 | 890,709 | 72,970 | 1,837,382 | 1,414,964 | —18,950 | 66,162 | 1,329,853 | 79,438 |
| Louisiana Ry. & Navigation Co. | 350 | 94,948 | 19,199 | 125,299 | 2,112 | 14,240 | 5,348 | 48,715 | 6,481 | 76,896 | 48,403 | ..... | 4,962 | 43,441 | 49,278 |
| Louisville & Nashville | 4,590† | 3,085,949 | 896,183 | 4,233,808 | 1,155,988 | 782,334 | 101,370 | 1,418,146 | 119,769 | 3,577,607 | 656,201 | 43,568 | 155,047 | 544,722 | —635,382 |
| Minneapolis, St. Paul & Sault Ste. Marie | 2,495‡ | 901,118 | 326,182 | 1,305,931 | 179,125 | 141,195 | 26,898 | 358,525 | 32,220 | 737,963 | 567,968 | 12,956 | 93,686 | 487,238 | 84,311 |
| New York, New Haven & Hartford | 2,041 | 2,545,421 | 2,125,282 | 5,428,182 | 730,370 | 430,195 | 61,590 | 1,961,841 | 399,461 | 3,583,457 | 1,844,725 | 121,707 | 328,377 | 1,638,055 | —467,954 |
| Northern Pacific | 5,814§ | 4,477,085 | 1,904,254 | 6,775,082 | 1,067,527 | 656,760 | 90,890 | 1,936,485 | 92,577 | 3,844,239 | 2,930,843 | 20,201 | 356,517 | 2,594,527 | 124,334 |
| Pittsburgh, Shawmut & Northern | 240 | 102,973 | 9,266 | 113,808 | 18,015 | 21,346 | 986 | 37,113 | 3,376 | 86,836 | 26,972 | ..... | 1,560 | 25,412 | 35,592 |
| Richmond, Fredericksburg & Potomac | 83 | 134,075 | 71,925 | 230,073 | 31,944 | 20,235 | 2,499 | 65,840 | 5,444 | 125,962 | 104,111 | ..... | 1,329 | 102,782 | 30,087 |
| St. Louis, Brownsville & Mexico | 494¶ | 85,181 | 44,005 | 140,265 | 32,085 | 15,347 | 2,962 | 55,888 | 7,291 | 113,574 | 26,691 | ..... | 5,736 | 20,955 | —23,422 |
| Seaboard Air Line | 3,015‖ | 1,122,730 | 307,280 | 1,594,872 | 226,435 | 248,099 | 55,176 | 549,995 | 44,193 | 1,123,898 | 470,774 | —9,134 | 67,766 | 393,874 | 45,309 |
| Southern Indiana | 236 | 148,207 | 14,050 | 163,899 | 21,478 | 32,006 | 2,569 | 42,596 | 3,754 | 102,403 | 61,496 | —153 | 6,928 | 54,415 | 21,213 |
| Spokane International | 141 | 61,300 | 23,141 | 88,347 | 20,424 | 4,481 | 1,902 | 24,803 | 3,046 | 54,656 | 33,691 | ..... | 4,458 | 29,233 | 13,431 |
| Texas Central | 268 | 28,511 | 26,067 | 61,509 | 19,064 | 11,458 | 1,472 | 23,574 | 3,376 | 58,944 | 2,565 | ..... | 2,138 | 427 | 15,644 |
| Toledo, Peoria & Western | 248 | 53,658 | 34,081 | 96,148 | 21,694 | 21,829 | 4,210 | 36,067 | 3,001 | 86,801 | 9,347 | ..... | 6,033 | 3,314 | —10,329 |
| Ulster & Delaware | 129 | 74,065 | 34,240 | 113,382 | 16,234 | 11,993 | 3,720 | 45,668 | 2,586 | 80,201 | 33,181 | 43 | 4,388 | 28,836 | 3,075 |
| Virginia & Southwestern | 188 | 76,341 | 10,363 | 90,586 | 13,098 | 27,173 | 1,293 | 23,534 | 2,849 | 67,947 | 22,639 | ..... | 5,210 | 17,429 | 1,963 |
| Washington Southern | 35 | 42,227 | 27,627 | 94,965 | 11,410 | 7,466 | 1,099 | 27,943 | 2,092 | 50,010 | 44,955 | ..... | 7,058 | 37,897 | 18,755 |
| Western Maryland Ry. | 543° | 483,597 | 76,825 | 589,676 | 79,910 | 68,711 | 9,749 | 196,208 | 12,035 | 366,613 | 223,063 | ..... | 18,500 | 204,563 | ..... |
| Western Ry. of Alabama | 133 | 43,398 | 32,715 | 85,409 | 18,614 | 16,415 | 5,546 | 23,720 | 5,121 | 69,416 | 15,993 | —135 | 2,176 | 13,683 | 3,358 |
| Yazoo & Mississippi Valley | 1,372 | 493,346 | 168,695 | 712,388 | 191,530 | 150,439 | 16,432 | 250,712 | 23,108 | 632,221 | 80,167 | —8,600 | 39,248 | 32,319 | 33,974 |
| FISCAL YEAR ENDING JUNE 30, 1910. | | | | | | | | | | | | | | | |
| Alabama Great Southern | 309 | $2,786,013 | $1,064,746 | $4,221,006 | $523,615 | $891,844 | $113,428 | $1,258,593 | $107,673 | $2,895,153 | $1,325,853 | —$7,944 | $136,548 | $1,181,361 | $246,906 |
| Ann Arbor | 301 | 1,264,661 | 467,430 | 1,856,159 | 298,306 | 246,453 | 46,981 | 642,806 | 64,222 | 1,298,768 | 557,391 | —31,041 | 147,967 | 378,383 | —12,067 |
| Atlantic & St. Lawrence | 167 | 986,256 | 309,855 | 1,430,545 | 337,223 | 165,543 | 42,508 | 509,801 | 38,037 | 1,093,112 | 337,434 | ..... | 102,508 | 234,925 | —70,422 |
| Canadian Pacific Lines in Maine | 233 | 695,370 | 298,865 | 1,080,735 | 255,118 | 176,983 | 55,525 | 452,454 | 38,440 | 978,520 | 102,215 | ..... | 60,717 | 41,498 | 55,190 |
| Central New England | 278* | 2,520,890 | 337,955 | 3,022,720 | 510,912 | 268,929 | 20,974 | 893,718 | 38,699 | 1,733,233 | 1,289,487 | ..... | 104,875 | 1,184,612 | 330,599 |
| Central of Georgia | 1,916 | 7,961,474 | 3,025,846 | 12,052,756 | 1,882,225 | 2,036,096 | 377,013 | 3,684,769 | 494,807 | 8,474,910 | 3,577,846 | 69,771 | 540,619 | 3,106,998 | 240,130 |
| Cincinnati, New Orleans & Texas Pacific | 337 | 7,082,859 | 1,536,939 | 9,079,471 | 987,743 | 1,592,076 | 235,339 | 2,499,332 | 216,383 | 5,530,873 | 3,548,598 | —3,014 | 233,315 | 3,312,269 | 804,970 |
| Colorado & Southern | 1,248 | 7,701,277 | 1,589,576 | 9,812,387 | 1,379,398 | 1,640,190 | 169,888 | 3,128,171 | 262,693 | 6,580,340 | 3,232,047 | —20,058 | 310,210 | 2,901,779 | 477,857 |
| Detroit, Grand Haven & Milwaukee | 190 | 1,229,755 | 551,410 | 2,041,402 | 282,566 | 297,479 | 71,275 | 839,994 | 64,661 | 1,555,975 | 485,427 | —77 | 36,108 | 449,242 | 95,357 |
| Georgia Southern & Florida | 395 | 1,295,760 | 707,843 | 2,322,157 | 236,673 | 497,781 | 70,683 | 892,548 | 104,224 | 1,801,909 | 520,248 | 6,442 | 101,525 | 425,165 | —49,199 |
| Grand Trunk Western | 336 | 3,997,642 | 1,839,980 | 6,232,362 | 766,614 | 899,473 | 234,248 | 2,324,141 | 157,417 | 4,381,893 | 1,850,469 | —15,106 | 380,368 | 1,454,995 | 19,219 |
| Gulf & Ship Island | 307 | 1,554,182 | 411,016 | 2,094,075 | 369,259 | 318,238 | 17,633 | 615,521 | 89,162 | 1,409,813 | 684,262 | ..... | 61,235 | 623,027 | 218,266 |
| Hocking Valley | 350 | 6,430,798 | 869,101 | 7,569,330 | 779,465 | 1,392,223 | 89,296 | 2,151,156 | 242,140 | 4,654,281 | 2,915,049 | 128,154 | 287,469 | 2,755,734 | 987,804 |
| Illinois Central | 4,550 | 38,777,758 | 11,881,013 | 57,884,721 | 7,607,891 | 13,502,250 | 1,246,382 | 19,734,910 | 1,229,297 | 43,320,730 | 14,563,991 | —34,418 | 2,524,899 | 12,004,674 | —941,261 |
| Indianapolis Southern | 179 | 751,072 | 226,515 | 1,023,313 | 207,214 | 130,983 | 15,480 | 389,421 | 13,706 | 756,804 | 266,509 | ..... | 48,331 | 218,178 | 47,779 |
| Kanawha & Michigan | 175 | 2,394,148 | 319,463 | 2,769,656 | 517,446 | 646,813 | 24,642 | 690,839 | 53,542 | 1,933,283 | 836,373 | —122 | 86,669 | 749,582 | 433,600 |
| Lehigh Valley | 1,433 | 30,579,597 | 4,330,172 | 36,167,398 | 3,462,903 | 5,995,810 | 918,720 | 10,593,565 | 713,149 | 21,684,147 | 14,483,251 | —146,333 | 1,106,762 | 13,230,156 | 1,900,724 |
| Louisiana Ry. & Navigation Co. | 350 | 1,078,061 | 194,367 | 1,419,057 | 249,460 | 157,983 | 59,724 | 566,296 | 72,419 | 1,105,882 | 313,175 | ..... | 49,112 | 264,063 | 227,827 |
| Louisville & Nashville | 4,590† | 38,421,779 | 10,796,997 | 52,433,381 | 8,172,166 | 8,559,104 | 1,120,516 | 16,030,238 | 1,103,554 | 34,985,578 | 17,447,803 | 121,232 | 1,602,632 | 15,966,403 | 1,681,557 |
| Minneapolis, St. Paul & Sault Ste. Marie | 2,495‡ | 10,691,434 | 3,540,577 | 15,060,237 | 1,442,700 | 1,568,603 | 284,857 | 4,315,753 | 276,741 | 7,888,654 | 7,171,583 | 117,274 | 908,279 | 6,380,578 | 1,742,089 |
| New York, New Haven & Hartford | 2,041 | 30,110,588 | 24,885,864 | 60,693,667 | 7,132,375 | 6,461,772 | 350,943 | 22,942,675 | 1,801,450 | 38,689,215 | 22,004,452 | 1,308,470 | 3,983,377 | 19,329,545 | 3,294,040 |
| Northern Pacific | 5,814§ | 48,758,736 | 21,333,313 | 74,525,826 | 10,842,955 | 8,992,137 | 1,036,404 | 24,045,197 | 1,070,712 | 45,987,405 | 28,538,421 | 602,475 | 3,622,000 | 25,518,896 | —2,803,371 |
| Pittsburgh, Shawmut & Northern | 240 | 1,041,306 | 196,775 | 1,170,025 | 161,675 | 313,302 | 12,772 | 394,331 | 38,759 | 920,839 | 249,186 | ..... | 18,783 | 230,403 | 239,491 |
| Richmond, Fredericksburg & Potomac | 83 | 1,285,221 | 780,238 | 2,331,548 | 344,042 | 257,735 | 29,255 | 725,096 | 60,264 | 1,416,392 | 915,156 | ..... | 3,529 | 911,627 | 186,094 |
| St. Louis, Brownsville & Mexico | 494¶ | 1,018,559 | 490,847 | 1,612,214 | 422,253 | 139,070 | 31,621 | 577,618 | 80,292 | 1,250,854 | 361,360 | ..... | 42,237 | 319,123 | —23,782 |
| Seaboard Air Line | 3 015‖ | 13,879,059 | 4,251,394 | 20,068,771 | 2,733,961 | 2,757,616 | 689,028 | 6,381,397 | 594,071 | 13,156,073 | 6,912,698 | —33,356 | 748,406 | 6,130,936 | 1,421,655 |
| Southern Indiana | 236 | 1,243,653 | 174,008 | 1,436,733 | 199,258 | 247,433 | 25,388 | 412,413 | 57,210 | 941,701 | 495,032 | —450 | 83,142 | 411,440 | 73,144 |
| Spokane International | 141 | 728,213 | 251,222 | 1,008,785 | 157,083 | 58,082 | 23,465 | 315,881 | 51,667 | 606,178 | 402,607 | ..... | 37,970 | 364,637 | 168,912 |
| Texas Central | 268 | 584,673 | 345,196 | 1,014,275 | 160,413 | 150,560 | 18,752 | 330,412 | 44,138 | 704,275 | 310,000 | ..... | 32,261 | 277,739 | 41,525 |
| Toledo, Peoria & Western | 248 | 697,431 | 410,915 | 1,173,419 | 207,887 | 215,094 | 30,425 | 434,749 | 37,559 | 925,714 | 247,705 | ..... | 61,034 | 186,671 | 32,468 |
| Ulster & Delaware | 129 | 735,926 | 351,937 | 1,139,253 | 136,217 | 145,342 | 19,698 | 448,953 | 29,671 | 779,881 | 359,372 | 1,239 | 39,587 | 321,024 | 47,068 |
| Virginia & Southwestern | 188 | 1,020,457 | 135,803 | 1,196,194 | 165,777 | 270,932 | 16,250 | 353,900 | 39,465 | 846,324 | 349,870 | ..... | 55,157 | 294,713 | —18,676 |
| Washington Southern | 35 | 421,419 | 377,446 | 1,057,738 | 102,841 | 104,454 | 13,092 | 374,133 | 25,954 | 620,474 | 437,264 | ..... | 32,851 | 404,413 | 71,708 |
| Western Maryland Ry. | 543° | 3,130,529 | 371,733 | 3,644,067 | 321,475 | 413,722 | 49,682 | 1,167,208 | 73,941 | 2,026,028 | 1,618,039 | ..... | 111,000 | 1,507,039 | ..... |
| Western Ry. of Alabama | 133 | 651,507 | 418,692 | 1,167,402 | 205,592 | 203,563 | 63,321 | 310,038 | 59,329 | 841,843 | 325,559 | —3,862 | 44,110 | 277,587 | 64,078 |
| Yazoo & Mississippi Valley | 1,372 | 7,062,066 | 2,220,986 | 9,939,342 | 2,091,592 | 1,842,173 | 197,641 | 3,285,319 | 281,490 | 7,698,215 | 2,241,127 | 17,571 | 430,338 | 1,828,360 | 497,789 |

Mileage operated on June 30, 1909: * 294 miles; † 4,398 miles; ‡ 2,395 miles; § 5,692 miles; ¶ 456 miles; ‖ 2,987 miles. ° Succeeded Western Maryland R.R. on January 1, 1910. —Indicates Deficits, Losses and Decreases.

### The Peaches and the Freight Rate.

"Missouri peaches, I notice," said a local freight agent, "are quoted in the Des Moines market at $2 per bushel to retail dealers. By the time they reach the consumer they cost, perhaps, $2.50 a bushel, assuming that two boxes make a bushel. Several days ago the cashier of a Des Moines bank received a letter from a friend stating they were selling peaches in Missouri for 50 to 75 cents a bushel. Assuming the price paid the producers was 75 cents, he was inclined to lay the blame for the addition of $1.75 to high freight rates. Now, the fact is that the freight and icing charges on peaches are 85 cents each 100 lbs. shipped from southern Missouri and Arkansas. As there are only 52 lbs. in a bushel of peaches it follows that the freight and icing charges do not exceed 45 cents a bushel. If the peaches cost consumers in Des Moines $2.50 per bushel, and the producers in Missouri get only 75 cents a bushel, there remains $1.30 per bushel to be accounted for other than the freight and the cost of production. Who gets it? You may search me, but it certainly is not the railways."—*Des Moines Register and Leader.*

### Tap Line Allowances.

The lumbermen of the Southwest are organizing to appeal to the Interstate Commerce Commission regarding the announcement of the railways in the southwest that on September 24 they will cease to pay tap line allowances to lumber roads. The action of the railways was taken in pursuance of a ruling by the commission holding that such allowances to roads that are not common carriers are in the nature of a rebate and illegal. Most of the lumber roads are not common carriers, but haul only the output of the lumber concerns that own them.

## INTERSTATE COMMERCE COMMISSION.

### Distribution of Coal Cars Discussed.

*Hillsdale Coal & Coke Co. v. Pennsylvania Railroad. Opinion by Commissioner Harlan.*

To the physical capacity of a coal mine the defendant adds its commercial capacity tested by the shipments made from it during the preceding 12 months, and divides the sum by two; these two factors being revised quarterly the mine is thus given a constantly corrected rating in the distribution of coal cars during percentage periods. If this basis is equitably applied to all mines served by the defendant the commission is unable to see that it results in an unequal, unfair, or discriminatory distribution of its equipment.

The complainant's contention that physical capacity alone is the fair and sound basis for rating coal mines for car distribution is not sustained; the utmost obligation of a carrier under the law is to equip itself with sufficient cars to meet the requirements of a mine for actual shipment; and it is of no real concern to the carrier what are the physical possibilities of a mine in the way of daily output except as that factor may afford some measure of what its actual shipments will be.

The commission reaffirms its previous ruling to the effect that the owner of private cars is entitled to their exclusive use and that foreign railway fuel cars assigned to a particular mine cannot be delivered to another mine; but it again holds that all such cars must be counted against the distributive share of the mine receiving them. It is therefore held that the defendant's rule, providing that the capacity in tons of such "assigned" cars shall be deducted from the rated capacity of the mine receiving them and that the remainder is to be regarded as the rated capacity of the mine in the distribution of all "unassigned" cars, is unlawful and discriminatory.

The defendant's contention that, so long as the petitioner receives all the coal cars it is entitled to, it has no right to complain because some other operator receives an undue proportion of cars is not sustained. The law not only gives the shipper a right to an equal or a justly ratable use of the facilities of an interstate carrier but the assurance also that no other shipper shall fare ratably better at the hands of the carrier.

The question of damages, which the complainant claims to have suffered as the result of the discriminations herein found to have been practised against it, reserved for further argument.

*Commissioner Prouty, dissenting.*

Although I am myself of the opinion that this case has been sufficiently talked about, and sufficiently considered, and that it ought to be finally disposed of, still if the majority deems it necessary to hear further argument on the question of damages, I do not dissent from that course. I do not agree with the holdings of the majority that this commission has no authority to assess and award these damages, and while it is not now proposed to make an order, from which I dissent, I wish to express my views on the subject. Sections 8 and 9 of the act to regulate commerce, in my opinion, give a clear statement, that in case of a violation of the act, resulting in damages to any person the carrier shall be liable for such damages, and an equally explicit declaration that the recovery of such damages may be had either by a proceeding before the commission, or by suit in court. But both remedies shall not be pursued for the recovery of the same damages.

The reasons of the majority for declining to exercise this jurisdiction, which is explicitly conferred by the ninth section, are stated in the *Joynes case.* It is there said in substance that damages resulting from a violation of the act may be divided into two classes, "rate" damages and "general" damages. By rate damages are meant those damages which can be ascertained by computation from a reference to the rates of the carriers only. The commission determines what the reasonable rate ought to be; it determines what rate has been paid; the damages are the difference between the rate exacted and the rate which should have been exacted. These damages the commission can and should award.

General damages may involve a consideration of all those elements which enter into the determination of damages in other cases. There is no exact measure by which such damages can be computed. To assess them involves the consideration of evidence and the exercise of judgment. For the assessment of such damages this commission has no greater qualification than a jury. Therefore, it is assumed that Congress, notwithstanding its express language to the contrary, did not intend to confer upon the commission authority to deal with damages of that character.

In support of this somewhat novel canon for the interpretation of statutes the commission refers to the action of the Supreme Court of the United States in the *Abilene case, supra,* in which that court held that, notwithstanding the language of the ninth section, by which a claimant is given an election between his suit in court and his proceeding before the commission, nevertheless, in certain cases, the proceeding must be in the first instance before the commission and cannot be in court. Just as the Supreme Court in that case has read out of the ninth section the right to begin certain cases before the courts, so the commission now proposes to read out of that same section the right to proceed in certain cases before the commission.

I can find no case in which the Supreme Court of the United States has ever undertaken to qualify the express language of an enactment upon the ground adopted by this commission in the *Joynes case.* That court has repeatedly said that courts have nothing to do with questions of expediency. Whether a statute is wise or unwise, whether it is expedient or inexpedient, whether the object aimed at is reached in the best way or not, are questions for the legislature, not reviewable by the courts. The *Abilene case,* as I read it, not only fails to sustain the position of this commission in declining to accept jurisdiction in matters like that before us, but, upon the contrary, plainly holds, both by necessary inference and by express language, that in a case like the one now under consideration the only tribunal in which complaint can be brought and damages obtained is this commission. If that be so, it is certainly the duty of the commission, no matter how inconvenient the exercise of that function may be, to entertain the complaint, determine as best it can the damages, and award those damages by its order.

I am unable to see any valid distinction between an excessive rate, and a rule or practice for the distribution of coal cars like that involved in this proceeding. This being so, I am utterly unable to see any ground on which a distinction can be made between the remedy, which has been open to the shipper for the recovery of damages in the two instances. Through appeals to the Supreme Court of the United States, the fact has been established that the commission has the power and can properly order the distribution of coal cars to mines on the basis

which is used in making this order. Nothing can be plainer than that Congress intended to confer on this body the authority of the law, and the duty to award damages for infractions of the act. The delays and expenses of the law are proverbial. One purpose of the act to regulate mines was to provide a speedy and inexpensive method by which the shipper could obtain relief in such cases. My own observation is that to an extent this expectation of the framers of the act has been realized. The complainant does ordinarily obtain his order for damages with less delay and outlay than in court, and the railway generally pays the award. The complainant claims to have been damaged by more than $100,000. Though the discrimination, which I have found to exist, and its evidence tends to strongly support that claim. A material part of these damages can never be recovered unless awarded in this proceeding, and that through no fault of the complainant, which promptly began and has zealously prosecuted its suit.

The opinion of McPherson, Judge, in Morrisdale Coal Co. v. Penn. R.R., 176 Fed. Rep. 748, which has come to my attention since the foregoing matter was prepared, fully sustains the position taken.

The records indicate that at times the number of private cars delivered to certain mines has exceeded the recovery assignments to these mines. Even if private cars had been counted against the assignment of those mines, they would still have received more cars in proportion to their rating than the complainant. In such cases, it seems to me that the railway is guilty of discrimination, although it delivers to the mines only the cars which that mine owns. (19 I. C. C., 355.)

## STATE COMMISSIONS.

The Texas railway commission has made a ruling that wherever a combination of local rates, whether passenger or freight, is lower than the through rates, the former shall be applied.

The State Railroad Commission of Texas proposes to require the ticket agent at every station to fill out, for the conductor and train auditor of every regular passenger train, a statement declaring that the office has been open 30 minutes and that tickets have been sold to all applicants; or if there are exceptions to such a statement to make the necessary explanation in writing. A blank, for 1126, has been prepared by the commission.

## COURT NEWS.

Judge Rogers, of the federal court, sitting at Fort Smith, Ark., has handed down an opinion in a case brought by the state of Arkansas against the St. Louis & San Francisco, in which he holds that the state cannot collect a penalty of $3,000 from the road because it hauled a carload of lime over its line in such a way as to make it interstate rather than state traffic. The shipment moved from Johnson, Ark., to DeQueen, Ark., and the road hauled it over a line, part of which is in Oklahoma, the length of the haul over this line being 200 miles and the rate applied being 23 cents. The Arkansas railway commission claimed that the shipment should have moved entirely within the state, although the shortest possible length of a haul within the state over its own lines would have been 400 miles and the rate that it would have got would have been 12 cents. Judge Rogers held that the attempt of the state to compel the Frisco to haul the shipment entirely within the state was an interference with interstate commerce. The state rate, of course, was fixed by the state commission.

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The employees of the Prussian state lines receive part of their pay as an allowance for house rent, varying with the grade of the employee, and also with the locality where he is stationed, it being assumed that more will be required for rent in a crowded city than at a country station. The allowances for the lowest grade of employees in the five classes of places are $35.70, $52.36, $69.02, $85.68 and $114.24. For the next higher grade they are nearly twice as great, for the next higher (including men of the fourth and fifth ranks) they vary from $150 to $309, and for officers of the highest rank from $214 to $500. These rates were recently fixed by the Prussian Diet. The sums throw some light on the necessary living expenses of the employees.

# Railway Officers.

## ELECTIONS AND APPOINTMENTS.

### Executive, Financial and Legal Officers.

H. C. Hudgins, general freight and passenger agent of the Norfolk Southern, at Norfolk, Va., has been appointed assistant to the president.

W. S. Kinnear, assistant general manager of the Michigan Central at Detroit, Mich., has been elected president of the Kansas City Terminal Railway, with office at Kansas City, Mo., succeeding H. L. Harmon, resigned.

E. A. Gould, general superintendent of the Cincinnati, Hamilton & Dayton, at Cincinnati, Ohio, has been appointed assistant to the president, with office at Cincinnati, and F. H. Alfred, assistant to the president, in charge of the engineering department, has been appointed general superintendent, with office at Cincinnati.

John F. Stevens, president of the Oregon Trunk Line and the Pacific & Eastern, and general manager of the Oregon Electric Railway, has been elected also president of the Spokane, Portland & Seattle and the Astoria & Columbia River, with office at Portland, Ore., succeeding G. B. French, resigned. A photograph of Mr. Stevens and a sketch of his career was published in our issue of September 10, 1909, page 475, at the time of his election as president of the Oregon Trunk Line.

E. N. Brown, president of the National Railways of Mexico at Mexico City, has been appointed also vice-president in charge of maintenance and operation of the Pan-American Railroad, and E. M. Wise, vice-president and general manager of the Pan-American at Gamboa, Oax., Mexico, relinquishes his title as vice-president. The following officers of the National Railways have had their jurisdiction extended over the Pan-American: Pablo Macedo, general counsel; J. E. Dennison, general auditor, and J. M. Frazer, general treasurer. Cancino & Riba have been appointed government representatives.

Fairfax Harrison, vice-president of the Southern Railway, who has been elected president of the Chicago, Indianapolis & Louisville, was born in New York, March 13, 1869. He graduated from Yale University in 1890 and studied law at Columbia University. He was admitted to the New York bar in 1892, and for several years he practiced law with the firm of Banks, Stetson, Tracy & McDeagh. He began railway work in 1896 as solicitor for the Southern Railway, and he had the title and a number of duties of solicitor up to the time that he left the Southern Railway. In 1903 in addition to being solicitor, Mr. Harrison was appointed assistant to President Spencer, his duties being more directly connected with the law and financial departments of the railway. In 1906 he was made vice-president, being in charge of the financial and accounting departments of the company and retaining certain duties of solicitor. His work on the Southern was not directly connected with either the operating or traffic departments of the road, although his duties brought him indirectly in contact with the operating department. He was a director of the Richmond-Washington Co., which is the holding company for the Richmond, Fredericksburg & Potomac, the Washington connection of the Southern Railway, and was also chairman of the board of directors of the Chesapeake Steamship Co. As a director of a number of the Southern's terminal companies he also came in indirect contact with the operation of the road. As president of the Chicago, Indianapolis & Louisville his office will be at Chicago.

### Operating Officers.

John M. O'Day, car accountant of the Chicago & Eastern Illinois at Chicago, has been appointed superintendent of transportation, with office at Chicago, and the office of car accountant has been abolished.

F. M. Curry, trainmaster of the Baltimore & Ohio Southwestern at Seymour, Ind., has been appointed a superintendent, with office at Flora, Ill., succeeding J. Donahue. Richard Mallen, road foreman of engines at Seymour, succeeds Mr. Curry.

F. H. Alfred, assistant to the president, in charge of the engineering department of the Cincinnati, Hamilton & Day-

ton, at Cincinnati, Ohio, has been appointed general superintendent, with office at Cincinnati, and E. A. Gould, general superintendent, at Cincinnati, has been appointed assistant to the president, with office at Cincinnati.

E. N. Brown, president of the National Railways of Mexico at Mexico City, having been appointed also vice-president in charge of maintenance and operation of the Pan-American Railroad, E. M. Wise, vice-president and general manager of the Pan-American at Gamboa, Oax., Mex., becomes general manager only, and will report to A. Clark, general manager of the National Railways at Mexico City. See item under Executive, Financial and Legal Officers.

J. P. Stevens, general superintendent of the Chesapeake & Ohio at Covington, Ky., has had his jurisdiction extended over the Chesapeake & Ohio of Indiana. R. P. Dalton, general superintendent of the latter road, with office at Chicago, has been appointed superintendent of terminals and general agent in charge of the Chicago terminal, including the yards at Hammond, Ind., and M. S. McDonald has been appointed a division superintendent, with office at Peru, Ind.

The Canadian Pacific has re-districted the lines now included in the Central, Western and Pacific divisions of the western lines, and there will henceforth be four general divisions, as follows: Manitoba division, Fort William to Broadview, J. T. Arundel, general superintendent, Winnipeg, Man.; Saskatchewan division, Yorkton to Swift Current and Hardisty, J. J. Scully, general superintendent, Moose Jaw, Sask.; Alberta division, Swift Current to Field and Kootenay Landing, and Wetaskiwin to Hardisty, A. Price, general superintendent, Calgary, Alb.; British Columbia division, from Field, Kootenay Landing and West, F. F. Busteed, general superintendent, Vancouver, B. C.

### Traffic Officers.

J. H. Price has been appointed general freight and passenger agent of the Millers Creek Railroad, with office at Van Lear, Ky.

Fred Van Fossen has been appointed a commercial agent of the Missouri Pacific, with office at Texarkana, Tex., succeeding G. L. Putsche.

George W. Lehy has been appointed a contracting freight agent of the Baltimore & Ohio Southwestern, with office at Cincinnati, Ohio.

C. W. Fish, traffic manager of the National Railways of Mexico at Mexico City, has had his jurisdiction extended over the Pan-American Railroad.

J. W. Ellingson, chief clerk in the traffic department of the San Pedro, Los Angeles & Salt Lake, has been appointed contracting freight agent, with office at Salt Lake City, Utah.

George B. McClean, city passenger agent of the Louisville & Nashville at Memphis, Tenn., has been appointed a district passenger agent, with office at Memphis, succeeding Max Baumgarten, resigned.

E. J. O'Neil, general agent in the freight department of the Chicago, Rock Island & Pacific at St. Louis, Mo., has been placed in charge of all traffic and transportation matters of the Rock Island lines in St. Louis.

G. B. Lindsay, general agent mail service of the Wabash, with office at St. Louis, Mo., has had his title changed to general agent mail and express traffic, and he has been appointed also general baggage agent, succeeding S. H. Overholt, assigned to other duties.

C. K. Junkins, contracting freight agent of the Western Pacific at San Francisco, Cal., has been appointed a traveling freight agent, with office at San Francisco. H. J. Morley has been appointed a traveling freight agent, with office at Elko, Nev. T. A. Jones succeeds Mr. Junkins.

J. H. Pearman has been appointed district passenger agent of the Western Pacific, with office at San Francisco, Cal. Walter B. Townsend, traveling freight and passenger agent at San Francisco, has been appointed district freight and passenger agent, with office at Oakland, Cal.

J. N. Harrison, district passenger agent of the Southern Railway, at Jacksonville, Fla., has been appointed Pacific coast passenger agent, with office at San Francisco, Cal., succeeding P. K. Gordon, resigned to go to another company. G. R. Pettit, traveling passenger agent at Macon, Ga., succeeds Mr. Harrison, and C. A. Carson, Jr., city passenger and ticket agent at Jacksonville, succeeds Mr. Pettit. J. J. McGee succeeds Mr. Carson, effective September 1.

### Engineering and Rolling Stock Officers.

H. M. Taylor has been appointed director of construction of the Pan-American Railroad.

F. H. Alfred, assistant to the president, in charge of the engineering department of the Cincinnati, Hamilton & Dayton, at Cincinnati, Ohio, has been appointed general superintendent, with office at Cincinnati. See item under Executive, Financial and Legal Officers.

S. A. Rogers has been appointed a road foreman of engines of the Baltimore & Ohio Southwestern, with office at Seymour, Ind., succeeding Richard Mallen, appointed trainmaster at Seymour. H. A. Brown has been appointed an assistant road foreman of engines on the Illinois division, a new office.

L. B. Allen, engineer maintenance of way on the Kentucky general division of the Chesapeake & Ohio at Richmond, Va., and W. T. Smith, superintendent of motive power on the same general division at Covington, Ky., have both had their jurisdiction extended over the Chesapeake & Ohio of Indiana.

### Purchasing Officers.

J. H. Guess, general purchasing agent of the National Railways of Mexico at Mexico City, has had his jurisdiction extended over the Pan-American Railroad.

## OBITUARY.

A. C. Goodrich, traveling passenger agent of the Baltimore & Ohio Southwestern, with office at Kansas City, Mo., died in that city on August 21, at the age of 72 years.

T. S. McDowell, formerly general superintendent of the Missouri, Kansas & Texas, died on August 18 at St. Louis, Mo. Mr. McDowell was born November 23, 1858, at Sturgeon, Mo., and was educated at Transylvania University, Lexington, Ky. He began railway work in October, 1874, as telegraph operator on the Missouri, Kansas & Texas, remaining with that company until September, 1887, when he went to the St. Louis Suburban Railway as master of transportation. The following year he was appointed trainmaster of the International & Great Northern, and in April, 1889, he returned to the Missouri, Kansas & Texas as trainmaster. He was appointed division superintendent of the same road in February, 1895, and from November, 1902, to July of the following year he was superintendent of the Choctaw division, then from July to September, 1903, he was division superintendent at Parsons, Kan., and was appointed general superintendent in September of the same year.

Colonel W. R. Woodard, formerly prominent in railway circles in the Middle West, died August 13, at Smithville, Tex. Mr. Woodard was born in 1841 in Shelby county, Ohio, and began railway work in 1855 as telegraph operator and waybill clerk on the Cleveland & Toledo Railway. In 1857 he was appointed train despatcher on the Ohio & Mississippi. He went to the Missouri Pacific in 1866 as superintendent, and was subsequently made assistant general superintendent of that company. In 1869 he went to the Missouri, Kansas & Texas as general superintendent and superintendent of construction, which road he completed. He was then general superintendent and assistant to vice-president of the Ohio & Mississippi for about a year up to the time it passed into the control of the Baltimore & Ohio. He then went to the Hannibal & St. Joseph, now part of the C., B. & Q. Resigning as general superintendent from that company in December, 1883, he became general manager of the Texas & St. Louis, now part of the St. L. S. W., and the following January was appointed receiver of that company. From April, 1885, to March, 1890, he was general superintendent of the Louisville, New Albany & Chicago, now part of the C., I. & L. Next he was general manager of the Louisville Southern, now part of the Southern Railway, and in March, 1891, was appointed general manager of the Kentucky & Indiana Bridge Co. About three years ago he became president of the Tacoma Railway Construction Co. He went to Texas a few months ago in the hope of regaining his health.

# Railway Construction.

### New Incorporations, Surveys, Etc.

Atchison, Topeka & Santa Fe.—The first section of 38 miles from Coleman, Tex., northwest to Tuscola, on the Texico-Coleman cut-off, has been opened for business.

Baltimore & Ohio.—A contract has been given to Bennett & Talbott, Greensburg, Pa., for piercing a new tunnel, parallel to and south of the old Kingwood tunnel, which is located at the summit of the grade between Grafton, W. Va., and Rowlesburg, in Preston county. The present tunnel is single track, 4,100 ft. long, and was built between 1849 and 1852. The new tunnel will be on a lower grade plane than the old one. The line will be relocated from the tunnel to a point three miles east. The tunnel will be double-track, with 14-ft. track centers, and will be 4,250 ft. long. After the completion of the improvements the old tunnel is to be used for westbound traffic only. The work is being carried out under the direction of A. W. Thompson, chief engineer. (Aug. 19, p. 332.)

Buffalo & Northern Oklahoma.—Organized by residents of Buffalo, Okla., and other towns in northwestern Oklahoma. with a capital of $100,000. The company proposes to build a line east and west through several counties in that section of Oklahoma. Surveys from Buffalo, eastward to Avard, are now being made. E. M. Best, president; O. L. Zook, vice-president; F. C. Platte, secretary, and E. C. Johnson, treasurer. It is understood that the St. Louis & San Francisco interests are back of the project.

Buffalo, Rochester & Pittsburgh.—See annual report of this company elsewhere in this issue.

Canadian Northern.—Work on the gap between Sellwood, Ont., and Port Arthur, about 500 miles, it is understood, will be commenced early next spring. Surveyors are now at work and it is expected that the surveys will be finished during the coming winter.

Arrangements are said to be made for carrying out extensive improvements at St. Boniface, Man., during the next two years. The work is to include putting up a roundhouse, storehouses, coal warehouses, freight sheds and a union station to be used jointly with the Grand Trunk Pacific. A new traffic bridge is also to be built over the Red river from St. Boniface to Winnipeg. The total cost of the improvements will be over $1,000,000, and the company agrees to have all the work finished within two years.

Canadian Pacific.—This company is said to have under consideration plans for the electrification of a part of its old steam line to Prescott, Ont., through the city of Ottawa, and the formation of an electric railway belt line around Ottawa, in connection with the Hull Electric Railway, which is controlled by the Canadian Pacific.

A contract has been given to Foley, Welch & Stewart, it is said, for building the remaining 26 miles of line between Carmangay, Alb., and Aldersyde. This work is on a section of the line between Calgary and Lethbridge, about 56 miles. It is expected to have the line finished about the middle of October.

Central Pacific.—See Southern Pacific.

Charles City & Western.—Construction work is said to have been started recently on this line. The plans call for a line from Charles City, Iowa, west to Rockford, about 20 miles. A. W. Dennis, Charles City, is interested. (March 25, p. 849.)

Chattanooga Southern.—An agreement is said to have been made between this company and the Rome & Northern to build a line connecting these two roads, to form a through line between Chattanooga, Tenn., and Atlanta, Ga. The Chattanooga Southern now operates a 90-mile line from Chattanooga, south to Gadsden, Ala. The Rome & Northern operates a 20-mile line from Rome, Ga., north to Gore, and is building an extension from Gore, northeast to Tunnel Hill, 33 miles. The proposed connecting line will be built partly by each company, the Chattanooga Southern is to build from Bronco, Ga., to Trion, eight miles, and the Rome & Northern from Gore to Trion, nine miles. It is understood that the Chattanooga Southern will build from Rome, south to Rockmart, or to some other point on the Seaboard Air Line, over which connection will be made for Atlanta. The work will probably include a 1,200-ft. tunnel through Taylor ridge on the section between Gore and Bronco.

Chicago & Wisconsin Valley.—This company, which was organized to build about 180 miles of line from Merrill, Wis., south to Janesville, has applied for a franchise in Madison, also for right-of-way on several streets in that city. A. J. Behymeyer, J. E. Jones and T. W. Potts are directors. (June 24, p. 1812.)

Chicago, Milwaukee & Puget Sound.—The Grays Harbor & Puget Sound, which has been under construction for the past two years from Centralia, Wash., west via Gates City, Cosmopolis and Grays Harbor to Hoquiam, about 60 miles, has been opened for traffic to South Aberdeen. Owing to the difficulty of securing a suitable right-of-way across the Chehalis river at Aberdeen, the line has not been extended to Aberdeen and Hoquiam, but it is expected to reach those places soon. The new line will be used jointly by the C., M. & P. S., and the Oregon & Washington, which is a Harriman line.

Cincinnati, Hamilton & Dayton.—An officer is quoted as saying that the company is planning to build an extension from Ironton, Ky., to a point about 147 miles south of the Ohio river. The work will include a bridge over the Ohio river near Ironton.

Crystal City & Uvalde.—This company has filed an amendment to its charter, increasing its capital stock from $65,000 to $100,000. The increase is for the purpose of securing funds to build an extension under the name of the Crystal City & Gardendale, from Crystal City, Tex., east to Gardendale, 41 miles. E. Breaker, chief engineer, Crystal City. (July 8, p. 103.)

Denver & Rio Grande.—An officer writes regarding the reports that extensive improvements are to be carried out between Pueblo, Colo., and Colorado Springs, that the company has not yet perfected plans for this work and it is not probable that anything will be done during the present season. (Aug. 12, p. 297.)

Grand Trunk Pacific.—According to press reports, this company will begin operating soon a section of about 250 miles from a point west of Weymontachene, Que., to the west side of the St. Lawrence river bridge. MacDonald & O'Brien have finished the work and will soon turn the section over to the operating department.

Grays Harbor & Puget Sound.—See Chicago, Milwaukee & Puget Sound.

Gulf & Magnolia Northern.—This company, which was organized to build from Hope, Ark., southeast to Magnolia, 35 miles, has been granted permission in Arkansas to build an extension from Hope west via Columbus and Horatio to the Oklahoma state line, 55 miles, and another extension from Magnolia, southeast through Columbia and Union counties to the Louisiana state line at Junction City, 37 miles. S. Q. Sevier, president, Hope. (Dec. 3, p. 1107.)

Louisville & Eastern (Electric).—This company recently opened for business an extension from Lakeland, Ky., east to Shelbyville, 23 miles.

Missouri, Kansas & Texas.—A contract is said to have been given to the Patton-Gibson Co. for constructing extensive yards west of Denison, Tex., in connection with the Ray yards.

Nebraska Roads.—Surveys are to be made soon, it is said, and a charter will shortly be asked for by a company with $5,000,000 capital. The plans call for a line from Beatrice, Neb., south via Greenleaf, Kan., Clay Center, Manchester, Salina, Lindsborg, McPherson and Halstead to Wichita, about 200 miles. The office of the company will be at Clay Center.

New York Subways.—The New York Public Service Commission, First district, expects to advertise soon for bids for the construction, equipment and operation by private capital of the proposed tri-borough rapid transit route, and also for construction with municipal funds of certain portions of the same route. Neither the date for beginning advertising or the parts of the roads selected for municipal construction have been finally determined upon. (July 22, p. 206.)

New York, Westchester & Boston.—This company has submitted a plan, providing for a number of changes in the borough of the Bronx, New York City, from the original route, to the New York Public Service Commission, First district; the plan is as follows:

The substitution of the use of the New Haven Company's tracks (six tracks) from 174th street to Willis avenue, instead of building the proposed line over that section.

The abandonment of the proposed line to Clason's Point and Throg's Neck, and substituting for the same an elevated double track line from the proposed terminal at 180th street, along East 177th street to Throg's Neck, with a double-track elevated branch to Clason's Point, along White Plains road from its intersection with East 177th street.

The building of a double-track elevated line from the main line of the N. Y., W. & B., near Unionport road, along White Plains road to a connection with the N. Y., N. H. & H. tracks, near 241st street.

The building of a connection between the tracks of the N. Y., N. H. & H. near Van Nest station, along Unionport road to a connection with the main line of the N. Y., W. & B., near the proposed 180th street terminal. (Aug. 5, p. 265.)

Northern Illinois & Southern Wisconsin Inland Lakes.—Plans made for building a line during the next 12 months to connect with a number of inland lakes in Kenosha county, Wis. Work is already under way, it is said, on a power plant at Palatine, Ill. J. K. Orvis is the principal promoter.

Oakland & Antioch (Electric).—Work is said to be under way on this line, between Lafayette, Cal., and Oakland. The plans call for a line from Oakland, northeast via Berkeley, Walnut Creek and Concord, to Bay Point, 34 miles. H. A. Mitchell, president, 347 Grant avenue, San Francisco. (Jan. 28, p. 209.)

Ohio Roads (Electric).—According to press reports, a number of capitalists of Toledo, Ohio, and Jackson, Mich., are considering the question of building an electric line from Toledo, northwest via Tecumseh, Mich., and Sand Lake to Jackson, about 65 miles. T. P. Brown is the principal promoter.

Oregon & Washington.—See Chicago, Milwaukee & Puget Sound.

Oregon Railroad & Navigation Co.—Work is being pushed on the change of line between Yoakum, Ore., and Pendleton, 13 miles. The work is heavy, with several channel changes on the Umatilla river. Twohy Brothers, the contractors, now have a force of 400 men at work and will double this force, to include a night gang. There will be three new steel bridges. (Feb. 25, p. 429.)

Rome & Northern.—See Chattanooga Southern.

St. Louis, Brownsville & Mexico.—An officer is quoted as saying that work will be started early in September on the first section of the branch from Kingsville, Tex., northwest to Alice, 22 miles. The company intends to eventually extend the line to San Antonio, a total of 160 miles. (Jan. 14, p. 118.)

Southern Pacific.—Plans for the proposed line of the Central Pacific have been filed in Nevada. The surveys call for a line from Fernley, Nev., thence over the old Central Pacific railway bridge, via Wadsworth along the west side of Pyramid lake and over Astor pass into the Honey lake country to the Nevada-California state line. It is understood that the line will eventually be continued north into Oregon, and that the work will be started soon.

United Railways Electric (Portland, Ore.).—A contract is said to have been given to Porter Brothers for building a section of the line from near Banks, Ore., to the head of Cedar canyon. The company now operates a 17-mile line from Portland, west via Burlington, and will push construction work on an extension west to the Pacific coast at Tillamook, in all about 80 miles. (July 22, p. 174.)

Western Pacific.—This company opened its line on August 22 for through passenger service from San Francisco, Cal., east to Salt Lake City, Utah, 921 miles. The line is also open for through freight service.

# Railway Financial News.

Atchison, Topeka & Santa Fe.—The Texas Railroad Commission has ordered canceled the lease whereby the Santa Fe operates the Rio Grande & El Paso. The contract expires in December, but the commission took this action to prevent its renewal. The Rio Grande & El Paso is controlled by the Santa Fe.

Colorado & Southern.—Clark, Dodge & Co. and White, Weld & Co., both of New York, have bought from the company and are offering to the public $3,000,000 refunding and extension mortgage 4½ per cent. bonds of May 1, 1905-1935. This is part of an authorized issue of $100,000,000, of which $28,230,490 have been issued. Of the bonds issued, $348,590 are held in the treasury. The bonds subject to the lien of the first mortgage are a direct lien on 1,041 miles of road, and through the deposit of securities have the equivalent of a first lien on 41.5 miles of the Colorado Railroad, 20.6 miles of the Denver & Interurban, 304 miles of the Trinity & Brazos Valley and 256.5 miles of the Wichita Valley; and in addition are secured by a first lien on securities of a par value of $23,064,653.

Delaware & Eastern.—The reorganization committee has issued a circular in which they say that they have had an examination of the property made by J. T. O'Dell, formerly general manager of the Baltimore & Ohio, and that his report in substance says that he found the country traversed by the road fertile and capable of supporting a railway, but that the original construction of the Delaware & Eastern was so poor that the expense of operation was increased to an extent which prevented the road's being run at a profit. He says: "Any money judiciously expended will pay two and probably three times the interest on the amount of new money required. The road can and must be put in condition to be operated, say, for $1,700 or $1,800 per mile per year, with $2,100 per mile as gross earnings, instead of as at present earning $2,100 per mile gross and spending $2,500 per mile for bare operating expenses by reason of the incomplete condition of the roadbed."

Missouri, Kansas & Texas Terminal of St. Louis.—This subsidiary of the Missouri, Kansas & Texas has filed with the secretary of state of Missouri a certificate of increase in the authorized stock from $100,000 to $10,000,000. Only $100,000 is now outstanding.

Rio Grande & El Paso.—See Atchison, Topeka & Santa Fe.

Spokane, Portland & Seattle.—The following have been elected to the board of trustees of the Spokane, Portland & Seattle: George T. Reid, western counsel of the Northern Pacific at Tacoma, Wash.; Howard Elliott, president of the Northern Pacific; Louis W. Hill, president of the Great Northern; F. V. Brown, attorney for the Great Northern at Seattle, Wash., and John F. Stevens, recently elected president of the S. P. & S.

Texas-Mexican.—The secretary of state of Texas has received an amendment to the charter of the Texas-Mexican, which reduced the company's authorized capital stock from $12,000,000 to $2,500,000.

### Railway for Caspian Fish Market.

Astrachan, at the mouth of the Volga, the only considerable town on the Caspian Sea, had been shut out from the world five months of the year when the ice closes the Volga; but it has been let into it by the construction of a railway east of the Volga, a distance of 343 miles, in the face of considerable obstacles. Except for a short distance at the northern end, the line is through the arid or semi-arid country which was once the bed of the sea which connected the Caspian and the Aral seas, and which has left some enormous deposits of salt, and no fresh water whatever. Then at the southern end it crosses the Volga delta, with three large and a great many small water courses, while the land itself at the time of the spring floods is covered with water 6 ft. deep. A very large part of the petroleum produced in Russia finds its way to market up the Volga, and Astrachan is the great fish market of the Caspian, and the headquarters of the trade with Persia.

# Supply Trade Section.

Dalton Risley, formerly with the National Refining Co., has accepted a position with the Indian Refining Co., Cincinnati, Ohio.

David W. Pye has been elected president of the United States Light and Heating Co., succeeding William H. Silverthorn, whose death we reported last week.

The American Concrete & Steel Railroad Tie Company, St. Louis, Mo., will build a plant in St. Louis for the manufacture of concrete railway ties. The plant is designed to turn out 2,000 ties daily.

Kolesch & Co., New York, have just published a new and revised form of traverse sheet. They are ruled, with printed headings, to conform with the system generally in use for figuring traverses, and are arranged for the co-ordinate system.

The Rapid Motor Vehicle Co., Pontiac, Mich., is installing a complete clam shell bucket coal handling crane system, manufactured by the Northern Engineering Works, Detroit, Mich. This company has also installed a 10-ton Northern crane in its power station.

John J. Mallay has been appointed general purchasing and supply agent of the Safety Car Heating and Lighting Co. and the Pintsch Compressing Co., New York, effective August 23. Mr. Mallay has been associated with the Safety company for several years in the departments over which he has now been placed in charge.

The Williams All Service Car Door Company, Clinton, Ill., was recently incorporated, as mentioned in the *Railway Age Gazette* of August 12. The officers are: W. S. Williams, president; C. W. Pifer, vice-president; C. R. Westcott, secretary and treasurer. The directors are W. S. Williams, C. W. Pifer, C. R. Westcott, William H. H. Hastings and Henry C. Koehler.

Wells Brothers Company, Greenfield, Mass., send the foremen of its various factory departments, with their families, on outings during the summer months. These outings take the form of all-day automobile trips through the surrounding country. One or two of the foremen, with their families, are sent at a time, the company providing a large touring car and paying all expenses. Each trip covers about 125 miles.

William J. Ball has been appointed mechanical engineer of the Crawford Locomotive & Car Co., Streator, Ill. Mr. Ball was in the engineering department of the Pullman Company for 12 years. He was mechanical engineer and sales representative of the Bettendorf Axle Company for four and a half years and spent four years in the railway supply business in Seattle, Wash., Portland, Ore., and Chicago. He is thoroughly familiar with the details of car construction, estimating and designing.

Gross sales of Western Electric Company, New York, for the eight months to August 1, ran at the rate of $61,000,000 per annum, which is an increase of 48 per cent. over the same period of the 1909 fiscal year. July sales increased somewhat, showing a 50 per cent. increase over July a year ago. This company now has 23,000 employees on its pay-rolls, an increase of 3,000 in the last four months, and compares with 17,000 last fall. The addition to working forces in the last few months has been necessitated largely by the increasing use of telephone apparatus in train despatching.

The Union Switch & Signal Co., Swissvale, Pa., according to a press despatch from Pittsburgh, has done more business during the first six months of this year than in any similar period before, and the year 1910 promises to far exceed any previous yearly record. It is expected that the net earnings for the year will be 50 per cent. on the capital stock, and will leave a surplus of over six million dollars after the payment of the usual dividends. The business of the month of July amounted to $650,000, producing net earnings at the rate of 60 per cent. per annum on the stock of the company.

The Locomotive Superheater Company, 30 Church street, New York, announces that it has acquired the United States and Canadian rights of what it regards as the basic patents of fire tube superheaters. The patents acquired include the inventions of Wilhelm Schmidt, H. H. Vaughan, A. W. Horsey, Francis J. Cole and others. There are more than 6,000 of these superheaters in successful operation or in course of construction in Europe and over 800 in America. The officers of the company are: President, Wilhelm Schmidt; vice-president, Simon Hoffman; secretary, Otto Von Schrenk; treasurer, Samuel G. Allen. The directors include the officers and Fritz Von Briesen, Oscar Gubelman, J. S. Coffin and Le Grand Parish.

The Damascus Brake Beam Company denies reports that it will move its entire business to Cleveland, Ohio, from Sharon, Pa. These reports grew out of a fire in the company's Sharon plant, the destructiveness of which has been greatly exaggerated. Before this fire, which took place about three weeks ago, the company was considering whether it should enlarge its plant at Sharon or build in Cleveland in order properly to take care of its increased beam business as well as to install special machinery for the making of forged steel heads and fulcrums. An opportunity to purchase a plant at Cleveland ready for occupancy—that of the Cowing Engineering Company, at the corner of Crosby avenue and the Nickel Plate railway—presented itself at just about the time the fire referred to took place, and the acquisition of this plant caused the report to be circulated that the company would immediately move to Cleveland. Its operations at Sharon were interrupted only temporarily and its output there in August will exceed that of any month in the company's history, except in 1907. The Cleveland plant will not begin operations before October, and just how much of the company's work will be done at that point will depend on the manufacturing advantages found there. The company's general offices and headquarters being at Cleveland may have a tendency to cause it to consolidate its organizations at that point. The property it has bought there will make such a plan easy to carry out, but it is too early yet to say that this will be done.

## TRADE PUBLICATIONS.

*Chain Power Transmission.*—With a title "Maximum Silent Chain," book No. 102, of the Link-Belt Company, Nicetown, Philadelphia, Pa., describes the latest improvement in the form of power-transmitting chain manufactured by this company.

## RAILWAY STRUCTURES.

BELLEVILLE, ONT.—Work is said to have been started by the Grand Trunk on a 42-stall roundhouse at Belleville. (Dec. 17, p. 1217.)

BROWNSVILLE, TEXAS.—The international bridge across the Rio Grande river between Brownsville, Tex., and Matamoras, Mexico, was formally opened on August 20. The bridge has been built jointly by the National Railways of Mexico and the St. Louis, Brownsville & Mexico. It makes possible the opening of new traffic routes from Chicago by way of St. Louis, Houston, Tex., and Brownsville to the City of Mexico and all principal Mexican cities.

CAMPBELLTON, N. B.—The Canadian Government will call for tenders for the rebuilding of the Intercolonial Railway roundhouse and shops, recently destroyed by fire. The cost is estimated at $250,000. (July 15, p. 144.)

CHADRON, NEB.—The Chicago & North Western is rebuilding the roundhouse and shops destroyed by fire recently.

CHICAGO.—The Chicago & North Western is having plans made for new machine shops at Fortieth avenue and Kinzie street. There will be two buildings, one 200 ft. x 360 ft., and the other 150 ft. x 200 ft. The cost will be $400,000.

CLEVELAND, OHIO.—The Toledo & Ohio Central has given a contract to Nicoll & Carr, Columbus, Ohio, to build a sub-station, to cost $64,300.

COLLEGE, PA.—The Pittsburgh & Lake Erie has given a con-

tract to Anderson & Cook, Beaver, Pa., to build a two-story station and office building.

DETROIT, MICH.—The Grand Trunk will build a brick, terra cotta ticket office, to cost $10,000.

The Michigan Central has bought a site on North Woodward avenue for a second union depot in addition to the main union depot. It will have a frontage of 140 ft., and the cost of the land is $140,000.

ELKHART, IND.—The Chicago, South Bend & Northern will build a combined freight and passenger station.

The Lake Shore & Michigan Southern has plans for new shop additions, including a four-story machine shop, 300 x 500 ft., erecting shop, repair shop, boiler shop and power plant.

FLORA, ILL.—The Baltimore & Ohio Southwestern will build a 20-stall roundhouse.

FORT WILLIAM, ONT.—A contract is said to have been given by the Canadian Pacific to O. A. C. Stewart & Co., Winnipeg, Man., for the piers, abutments and pedestals of the bridge over the Kaministiqua river. (Feb. 18, p. 383.)

FORT STOCKTON, TEX.—The Kansas City, Mexico & Orient will build a $15,000 station.

FULTON, MO.—The Chicago & Alton has announced that it will build a $10,000 depot next year.

HOUSTON, TEX.—According to local reports, the Southern Pacific will let the contract soon for putting up the new office building at Franklin and Travis streets in Houston. (July 15, p. 144.)

IRONTON, KY.—See Cincinnati, Hamilton & Dayton under Railway Construction.

JOPLIN, MO.—The Joplin Union Depot Company has given a contract to the Manhattan Construction Company, Ft. Smith, Ark., to build a stone concrete station.

LIBERAL, KAN.—The Chicago, Rock Island & Pacific has given a contract to the George B. Swift Company, Chicago, to build a railway station, 30 x 128 ft., and a two-story hotel, 71 x 80 ft., to cost $60,000.

MARSHALL, TEXAS.—The Marshall & East Texas has given a contract to W. H. Pugh to build a new blacksmith and machine shop.

NORTH PLATTE, NEB.—The Union Pacific, it is understood, will put up a passenger station at North Platte, to cost $80,000.

NORTHUMBERLAND, PA.—The Pennsylvania Railroad has given a contract to W. B. Steinbach & Son, Lewistown, Pa., for putting up 28 buildings, to cost $200,000, in the new Northumberland classification yards. The buildings will be of brick and frame construction and will include shops, offices, coal wharves, chutes and other structures. The work is to be started at once.

PALATINE, ILL.—See Northern Illinois & Southern Wisconsin Inland Lakes under Railway Construction.

PORT ARTHUR, TEX.—The Kansas City Southern will build a station to cost $15,000.

QUEBEC, QUE.—The time for receiving bids for the steel superstructure for the Quebec bridge, which were asked for by L. K. Jones, secretary of the Department of Railways and Canals, Ottawa, Ont., up to September 1, has been extended for one month. (July 22, p. 176.)

ST. BONIFACE, MAN.—See Canadian Northern under Railway Construction.

SALT LAKE CITY, UTAH.—The Oregon Short Line is planning to build a new general office building.

ST. PAUL, MINN.—A resolution has been passed by the Board of County Commissioners, which requires the Wisconsin Central to put up a new bridge at Arcade street, just north of the St. Paul city limits.

SNYDER, OKLA.—The St. Louis & San Francisco will build a brick or reinforced concrete station, to cost $10,000.

TOWACO, N. J.—An officer of the Delaware, Lackawanna & Western writes that the company will put up a small fireproof passenger station at Towaco.

# Late News.

*The items in this column were received after the classified departments were closed.*

W. R. Sibley has been appointed a traveling agent for the foreign freight department of the Erie Railroad, with office at Chicago, succeeding J. H. C. Clark, resigned.

The Oregon & Washington has submitted plans to the city authorities of Seattle, Wash., for building a bridge across Seattle Boul. Plans are also made for building a bridge on Jackson street.

B. L. Bugg, general agent of the Old Dominion Steamship Co., at Norfolk, Va., has been appointed traffic manager of the Norfolk Southern. W. W. Croxton, assistant general passenger agent of the Norfolk Southern, at Norfolk, has been appointed general passenger agent.

Charles W. Bullen, vice-chairman of the freight department of the Trunk Line Association, at New York, has resigned. Mr. Bullen for more than 25 years has been identified with this branch of the work of the association and was an authority on all questions connected with freight rates.

Seven hundred men at the Law shaft of the Pennsylvania Coal Co., at Averca, Pa., went on strike on Thursday. They claim that they have been docked excessively, and say that there is a difference of 3,000 tons between the amount of coal they claim they mined during the last two weeks and the amount for which the company declares it will pay.

E. A. Wigren has been appointed auditor of disbursements of the Toronto, Hamilton & Buffalo; Thomas Edson, freight accountant and freight claim agent, has been appointed auditor of freight accounts and freight claim agent, and H. J. Broderick, ticket accountant, has been appointed auditor of passenger accounts, all with offices at Detroit, Mich. All these officers hold similar positions on the Michigan Central.

Construction has been started on the Youngstown & Northern Railroad, the new belt line of the United States Steel Corporation, which will connect the Youngstown plants with Niles, Pa., McDonald and New Castle, where a junction will be formed with the Bessemer road. This belt line will be completed before work is started on the new finishing mills to be built at McDonald, the new town the company will build.

Western Pacific's new traffic arrangement with the Toyo Kisen Kaisha, the Oriental steamship company, will become operative Jan. 26, 1911. After completing arrangements whereby the Toyo Kisen Kaisha will sever its connections with the Pacific Mail Steamship Co. and other Harriman lines and will become affiliated with the Western Pacific, the general manager of the Oriental Line has announced that January, 1911, will be the date when the new arrangements will become effective and also that on and after Jan. 26, 1911, his company would operate five steamships between San Francisco and the Orient instead of three, the number now in service. The new ships will be the America Maru, which is being repaired for the new service, and a turbine steamer under construction in the yards at Nagasaki. The new turbine will be a sister ship to the Chiyo Maru and the Tenyo Maru. The traffic arrangements with the Western Pacific will be similar to the arrangement which existed with the Southern Pacific. The steamship company will have full and free interchange of traffic, both inward and outward bound. Through rates will be made from anywhere in the United States to the Orient via San Francisco. It is expected that considerable attention will be devoted to securing cotton traffic from the Southwest via San Francisco under he new traffic arrangement. The most of the cotton traffic to the Orient has heretofore gone via Puget Sound, the Hill roads handling the largest proportion. This trade can be made an important item. With the extensive system of Gould roads reaching every portion of the Southwest, the Western Pacific, with its new Oriental connection, should secure a large proportion of the traffic for supplying raw cotton to the mills of Japan. Western Pacific officials have made a careful study of the cotton traffic possibilities and expect to develop important business from this source.

# Equipment and Supplies.

## LOCOMOTIVE BUILDING.

*The Union Railroad* advise that it has not yet placed an order for 10 consolidation locomotives.

*The Cuba Eastern* has ordered, through J. G. White & Co., New York, three five-ton locomotives from the American Locomotive Company.

*The Delaware & Hudson* has ordered 12 compressed air locomotives from the Vulcan Iron Works. These locomotives will be used about the Scranton, Pa., operations of the railway company.

*The Imperial Railways of Japan,* Korean Lines, have ordered nine 10-wheel passenger locomotives from the American Locomotive Company. These engines will have 20-in. x 26-in. cylinders, 66-in. driving wheels, and a total weight of 150,000 lbs.

## CAR BUILDING.

*The Havana Central,* reported in the *Railway Age Gazette* of August 12 as being in the market for freight cars, has altered its inquiry to include 150 thirty-ton flat, 100 thirty-ton box, 15 caboose and 125 stock cars.

*The Cuba Eastern,* reported in the *Railway Age Gazette* of May 20 as being in the market for miscellaneous freight equipment, has ordered, through J. G. White & Co., New York, 70 thirty-ton cone and 26 forty-ton box cars from the Mt. Vernon Car Mfg. Company, and 30 forty-ton flat cars from the Fitz-Hugh, Luther Company.

## IRON AND STEEL.

*The Wabash* has ordered 1,500 kegs of spikes.

*The Baltimore & Ohio* has ordered 2,000 tons of spikes.

*The Bengal North Western* is in the market for 1,100 tons of rails.

*The Bengal Nagpur Railway* is in the market for 2,500 tons of rails.

*The Pennsylvania Lines West* are in the market for 1,600 tons of structural steel.

*The Lake Shore & Michigan Southern* is in the market for 900 tons of structural steel.

*The Sind Light Railway* has ordered 2,200 tons of rails from the Workington Steel Company.

*The Seaboard Air Line* has ordered 300 tons of structural steel from the Phoenix Bridge Works.

*The Pennsylvania* has ordered 1,500 tons of structural steel from the Pennsylvania Steel Company.

*The Great Indian Peninsula Railway* has ordered 6,000 tons of rails from the Barrow Hematite Company.

*The National Railways of Mexico* have ordered 10,000 tons of rails from the Lackawanna Steel Company.

*The Atchison, Topeka & Santa Fe* has ordered 1,650 tons of bridge steel from the American Bridge Company.

*The Chicago, Milwaukee & St. Paul* has ordered 325 tons of structural steel from the Pennsylvania Steel Company.

*The New York Central* has ordered 10,000 tons of structural steel from the American Bridge Company for terminal improvements in New York.

*General Conditions in Steel.*—The railways are showing signs of activity, which is, however, confined mostly to structural steel although rail inquiries are pending. The Lackawanna Steel Company obtained the order for 10,000 tons of rails for the National Railways of Mexico, which it was generally thought, would be placed in foreign markets. It is understood that the shipments of finished steel by the United States Steel Corporation during August will be considerably in excess of what they were in July, and that net earnings in August may run close to $14,000,000. In April they amounted to approximately $13,415,000; in May, $13,229,000, and in June, $13,526,000.

## SIGNALING.

The Indiana State Railroad Commission has approved the plans and specifications for the interlocking now being installed near Hammond for the use of nine railways. The machine, which will soon be ready for use, is all-electric and has 224 levers. Trains of the following roads will use this plant: The Chicago & State Line, the Chicago & Western Indiana, the New York, Chicago & St. Louis, the Chicago & Erie, the Louisville, New Albany & Chicago, the Chicago & Calumet Terminal, the Michigan Central, the Hammond & Blue Island and the State Line & Indiana City.

### Specifications.

A specification is defined as a definite, particularized and complete statement, the written document in which engineers and architects describe those portions of proposed work which they cannot clearly show by diagrams. In addition, they are expected to specify the material and quantities required, and, with this, the manner of carrying out the work.

Specifications should be both definite and exact; then the engineer not only fully understands what he requires, but where, also, he expects to enforce their carrying out. Engineers may think that they are able to shield themselves behind a host of unreasonable clauses should a mistake be made. The client must pay for these unreasonable requirements, and the engineer who inserts them places himself in an unfavorable light before the contractors, the men who do the work and are in a position to judge of the necessity of each and every clause.

The insertion of such a clause as "All works are to be done to the entire satisfaction of the engineer. He is to be the sole judge, and the work or material, both of quality and quantity, and his decision only on all questions of dispute with regard to work or material, or as to the meaning or interpretation of plans and specifications, is to be considered final and binding on all parties," are among the most difficult to understand. Why the engineer who prepares specifications and who is a client's representative shall be the sole judge or referee or arbitrator in matters of dispute between himself and the contractor it is difficult to understand.

The engineer requires certain work to be done. The contractor, for a price, is willing to do the work. They both are agreed with the drawings and specifications covering the work required. It is unreasonable to expect the contractor to be content with any matters of dispute between himself and the engineer when the engineer is the only referee. Such a clause would probably not hold in a court of law, although engineers persist in inserting such clauses in the specifications. Such a clause as this places the men who make the drawings, prepare the specifications, the contract and issue the progress estimates, the arbitrators in the matters of dispute.

Such a clause undoubtedly keeps a number of contractors from bidding on work where they are not personally acquainted with the engineer. This reduces the number of bids considerably, and places the work practically in the hands of the friends of the engineer, which is frequently not good business, either for the client or the engineer.

The wording of specifications and the preparation of drawings and designs for the purpose of securing what is required and the statement of what the contractor is expected to perform should be prepared in such a way as to place all contractors upon the same footing. Nor should they be so stringent as to eliminate competition.

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The Shantung Railway had an immense increase in freight traffic in 1909, perhaps because of carrying materials for the new line from Tien Tsin to Nankin. The freight earnings increased from $931,358 in 1908 to $1,346,645 in 1909, or 45 per cent., there being a small decrease in passenger and other earnings. The dividend was increased from 4¾ to 6 per cent. The increase in net earnings was 36¾ per cent. The company is beginning to establish a forest, and is to plant a million trees yearly for ten years.

# ANNUAL REPORTS

## BUFFALO, ROCHESTER & PITTSBURGH—TWENTY-FIFTH ANNUAL REPORT.

The Directors of the Buffalo, Rochester and Pittsburgh Railway Company submit to the Stockholders the following report for the year ending June 30, 1910:

ROAD OPERATED.

| | 1910, miles, | 1909, miles. | Increase, miles. | Decrease, miles. |
|---|---|---|---|---|
| Owned | 346.39 | 347.13 | ..... | .74 |
| Leased | 93.83 | 94.00 | ..... | .17 |
| Trackage rights | 126.66 | 126.66 | ..... | ..... |
| Total length of road operated. | 566.88 | 567.79 | ..... | .91 |
| Second track (owned) | 102.57 | 101.08 | 1.49 | ..... |
| Second track (trackage rights) | 81.63 | 81.63 | ..... | ..... |
| Sidings (owned and leased) | 298.28 | 280.94 | 17.34 | ..... |
| Total miles of all tracks, all steel rail | 1,049.36 | 1,031.44 | 17.92 | ..... |

The decrease in mileage of road operated is due to a change of alinement at various points. The tracks were increased by 1.49 miles of second track constructed at Elk Run Junction, Pa., and 17.34 miles of new sidings.

INCOME.

| | 1910. | 1909. | Increase, or decrease. |
|---|---|---|---|
| RAIL OPERATIONS: | | | |
| Operating revenues | $8,936,116.96 | $7,171,896.85 | $1,764,220.11 |
| Operating expenses | 5,903,904.93 | 4,665,170.93 | 1,238,734.00 |
| Net operating revenue | $3,032,212.03 | $2,506,725.92 | $525,486.11 |
| OUTSIDE OPERATIONS: | | | |
| Revenues | $17,064.21 | $14,514.82 | $2,549.39 |
| Expenses | 19,418.64 | 15,149.19 | 4,269.45 |
| Net deficit | $2,254.43 | $634.37 | *$1,720.06 |
| Total net revenue | $3,029,857.60 | $2,506,091.55 | $523,766.05 |
| TAXES ACCRUED | 188,095.17 | 133,000.00 | 55,095.17 |
| Operating income | $2,841,762.43 | $2,373,091.55 | $468,670.88 |
| OTHER INCOME | 552,380.19 | 436,812.97 | 115,567.22 |
| Gross corporate income | $3,394,142.62 | $2,809,904.52 | $584,238.10 |
| DEDUCTIONS FOR INT. AND RENTALS. | 1,866,769.16 | 1,767,482.25 | 99,286.91 |
| Net corporate income | $1,527,373.46 | $1,042,422.27 | $484,951.19 |
| APPROPRIATIONS: | | | |
| Pension Fund | $12,696.54 | $12,483.66 | $212.88 |
| Special appropriation | 315,000.00 | ..... | 315,000.00 |
| TOTAL APPROPRIATIONS | $327,696.54 | $12,483.66 | $315,212.88 |
| Surplus available for dividends | $1,199,676.92 | $1,029,938.61 | $169,738.31 |

*Decrease.

The increase in Taxes was caused by the operation of the new Federal Corporation Tax law, also by higher taxes imposed on Capital Stock.

"Other Income" shows a net increase of $115,567.22. The reduction in the dividend on the stock of the Ontario Car Ferry Company, Limited, and a decrease in "Miscellaneous" were offset by gains in "Hire of Equipment," "Joint Facilities" and "Interest."

The increase in "Deductions for Interest and Rentals" is accounted for by increased payments for rentals, joint facilities and interest on additional obligations outstanding at the close of the year.

A special appropriation of $315,000 was made from the "Net Corporate Surplus." Of this amount, $125,000 was paid into the Sinking Funds under Equipment Agreements Series A, B and C, for the purchase of new rolling stock, and $190,000 represents one-half of the principal of bonds Series D, E and F, paid during the year, the other half being refunded by 4½ per cent. bonds, issued under the terms of the Consolidated Mortgage, and held in the Treasury of the Company.

DIVIDENDS.

| Dividends in cash were paid on: | | | 1910. | | 1909. |
|---|---|---|---|---|---|
| Preferred stock | $6,000,000 | 6% | $360,000 | 6% | $360,000 |
| Common stock | 10,500,000 | 4% | 420,000 | 4% | 420,000 |
| Total | $16,500,000 | | $780,000 | | $780,000 |

Since the close of the fiscal year, your Board of Directors has declared a semi-annual dividend of three per cent. on the preferred stock and two per cent. on the common stock, both payable August 15, 1910.

CAPITAL STOCK.

There has been no change during the year in this account. The total outstanding Capital Stock of the Company amounts to $16,500,000, and consists of $6,000,000 preferred stock, and of $10,500,000 common stock.

FUNDED DEBT.

During the year the $5,000 Income 6 per cent. Bonds, heretofore outstanding, were purchased and, together with the $1,000 of that issue held by the Company, turned over to the Trustee, against which $3,000 Consolidated 6 per cent. Bonds of 1882 were issued and sold. These transactions allowed the Trustee to cancel $1,870,000 Income 6 per cent. Bonds, being the entire issue of that security created in 1881.

The remaining $860,000 Construction and Improvement 4½ per cent. notes maturing August 1, 1909, were paid and canceled.

In accordance with the provisions of the 4½ per cent. Consolidated Mortgage of 1907, $1,277,000 of bonds were issued and sold, and the proceeds applied, as far as necessary, to pay for additions and betterments; and the unexpended balance was carried over to meet similar expenditures in the new year. The Trustee also delivered to the Company $709,000 Consolidated Mortgage 4½ per cent. Bonds, representing 50 per cent. of Equipment Bonds, Series D, E and F, retired up to June 30th, 1910. These bonds are held as a reserve in the Treasury of the Company.

Under the terms of the Sinking Funds for the redemption of Equipment Bonds, $380,000 bonds were retired as follows: $115,000 of Series "D"; $98,000 of Series "E"; and $167,000 of Series "F."

Equipment Bonds were issued as follows: The balance of Series "E," authorized in 1904, amounting to $550,000, and the balance of Series "F," authorized in 1907, amounting to $183,000.

To provide for additional rolling stock, an issue of $3,000,000 Four Per Cent. Twenty-year Gold Bonds was authorized, to be secured by new equipment costing $3,300,000. These bonds are being issued under an agreement known as "Equipment Agreement, Series G," dated October 1, 1909.

This agreement provides for a sinking fund equal to 6 per cent. per annum of the bonds issued, to be paid to the trustee on the first day of February in each year, beginning with February 1, 1911, for the purchase of bonds of this series, if the same can be obtained in the open market at par and accrued interest, or less; otherwise the trustee shall draw by lot sufficient bonds approximately to absorb at the price of par and accrued interest, the amount of cash held by the trustee to the credit of the sinking fund; all the bonds so acquired to be canceled.

During the year equipment bonds of this series were issued to the amount of $754,000.

The net result is an increase of $2,052,000 in the bonded debt of the Company, outstanding on June 30, 1910.

CONSTRUCTION.

Capital account has been charged during the year with $906,496.28 for additions and betterments to your property, as follows:

| | |
|---|---|
| Land | $19,972.80 |
| Improving bridges and culverts | 51,058.13 |
| Station improvements, Rochester, N. Y. | 20,880.86 |
| New station, Ridgway, Pa. | 18,064.90 |
| New office building, Du Bois, Pa. | 43,469.17 |
| Water station, Indiana Junction, Pa. | 109,329.38 |
| Water station, Creekside, Pa. | 3,493.39 |
| Water station, Falls Creek, Pa. | 95,932.92 |
| Water station, Ketner, Pa. | 31,901.44 |
| Mechanical coal and ash handlers | 8,745.05 |
| Gas plant, Du Bois, Pa. | 6,138.64 |
| Creosoting plant, Bradford, Pa. | 59,408.88 |
| Enlarging ore unloader, Buffalo, N. Y. | 14,893.77 |
| Increase weight of rail | 13,013.87 |
| Shops and machinery | 19,634.80 |
| Sidings and yard extensions | 131,111.31 |
| Second track, Elk Run Junction, Pa. | 55,090.27 |
| Second track, Brockwayville, Pa., to Carman, Pa. | 15,370.06 |
| Second track, Newton, Pa., to Mt. Jewett, Pa. | 72,694.09 |
| Nesbit Run mine line | 36,928.39 |
| Jacksonville mine line | 65,291.08 |
| Other items | 14,073.08 |
| Total. | $906,496.28 |

To further provide a pure water supply for locomotives, a storage reservoir at Indiana Junction was built during the year. Reservoirs at Ketner, Pa., and Falls Creek, Pa., are now in course of construction.

The mechanical ore unloader on the Buffalo docks, purchased in 1903, was rebuilt and its capacity greatly increased.

A modern brick and stone building is under construction at Du Bois, Pa., for the accommodation of the officers located at that point, and will be shortly completed.

Improvements to the Rochester terminal, including the remodeling of the passenger station, were undertaken and are well advanced.

A brick and stone passenger station was completed at Ridgway, Pa.

A creosoting plant is being constructed at Bradford, Pa., of sufficient capacity to treat the annual tie supply of your Company. It will be ready for use by September 1st and will result in material economy in expenditures for ties.

The Nesbit Run line, a spur track projected to tap new mines, is now in operation; another spur track known as the Jacksonville Line is rapidly approaching completion.

A great deal of work of a permanent character was also done on trestles, culverts and bridges.

There were laid 1.49 miles of new double track at Elk Run Junction, Pa., and a considerable amount of grading was done on 8.52 miles of new double track between Newton, Pa., and Mt. Jewett, Pa. With the completion of this link, the main line will be double tracked from Punxsutawney, Pa., to Ashford, N. Y., a distance of 131.85 miles.

Facilities for handling traffic have been materially increased by the construction of additional siding and yard tracks.

EQUIPMENT.

| | | |
|---|---|---|
| Expenditures were made for new rolling stock as follows: | | |
| Fifteen locomotives | $237,593.22 | |
| Three passenger service cars | 26,930.80 | |
| Two thousand freight service cars | 1,708,446.78 | |
| Sundry betterments, air brakes, etc., including transfer of one freight service car and one hundred Company's service cars | 93,712.49 | |
| | $2,066,683.29 | |
| The account was further increased by the amount charged to "Reserve for Accrued Depreciation" since June 30, 1907, in accordance with the Classification of Expenditures for Additions and Betterments prescribed by the Interstate Commerce Commission, effective July 1, 1909. | 464,850.86 | $2,531,534.15 |
| There was credited for Equipment sold, transferred or destroyed, the following book values, charged in part to Operating Expenses, and the balance, representing the depreciation written off since June 30, 1907, to "Reserve to Accrued Depreciation": | | |
| Three locomotives | $18,417.89 | |
| Two passenger service cars | 3,944.78 | |
| Nine hundred fifty-eight freight service cars | 305,994.05 | |
| Four Company's service cars | 3,020.75 | |
| | | 331,377.47 |
| Making a net increase of | | $2,200,156.68 |

All cars in freight service are now provided with automatic couplers and 98.36 per cent. of the cars are equipped with air brakes.

When rolling stock is sold, transferred or destroyed, operating expenses is charged with the book value, less amount previously written off for depreciation, which is debited to "Reserve for Accrued Depreciation"; and the account "Additions and Betterments—Equipment" is credited: when purchased or rebuilt the cost is charged direct to "Additions and Betterments—Equipment" account.

The reserve for accrued depreciation of equipment on June 30, 1910, amounted to $936,939.39.

PASSENGER REVENUES.

The average rate received per passenger per mile increased 87/100ths of a mill, being 2.063 cents as compared with 1.976 cents a year ago.

The average distance each passenger was carried increased 57/100ths of a mile, being 30.12 miles, against 29.55 miles last year.

| | | |
|---|---|---|
| Passengers carried in 1910 | 1,586,838 | |
| Passengers carried in 1909 | 1,520,119 | |
| An increase of 4.39 per cent., or | | 66,719 |
| Passengers carried one mile in 1910 | 47,802,085 | |
| Passengers carried one mile in 1909 | 44,914,997 | |
| An increase of 6.43 per cent., or | | 2,887,088 |

The result is a gain of $98,744.36 in gross passenger revenues.

A further gain was made in the revenues derived from Mails, Express, Excess Baggage, incidental to the passenger traffic, amounting to $13,581.95.

FREIGHT REVENUES.

The average rate received per ton per mile decreased 1/100th of a mill, being 4.81 mills, as compared with 4.82 mills last year.

The average distance each ton was hauled decreased 79/100ths of a mile, being 154.65 miles, against 155.44 miles a year ago.

The revenue tonnage moved was the largest in the history of the Company, all of the various commodities showing gains as follows:

| | 1910. | 1909. | Increase. | Per cent. |
|---|---|---|---|---|
| Bituminous coal | 6,526,087 | 5,186,043 | 1,340,044 | 25.8 |
| Coke | 578,380 | 301,386 | 276,994 | 91.9 |
| Iron ore | 558,550 | 466,956 | 91,594 | 19.6 |
| Pig and bloom iron | 209,032 | 192,137 | 16,895 | 8.8 |
| Other freight | 2,298,434 | 1,862,468 | 435,966 | 23.4 |
| Total | 10,170,483 | 8,008,990 | 2,161,493 | 26.99 |

| | |
|---|---|
| Tons moved one mile in 1910 | 1,572,897,173 |
| Tons moved one mile in 1909 | 1,244,946,097 |
| An increase of 26.34 per cent., or | 327,951,076 |

The result for the year is a gain of $1,560,687.25 in gross freight revenues.

In addition thereto, the revenues derived from Switching, Special Service Trains, Car Service, Ganson St. Dock, etc., incidental to the freight traffic, show an increase of $91,206.55.

EXPENSES.

Operating expenses increased $1,238,734.00, or 26.55 per cent. With the exception of a decrease of $6,140.03 in General Expenses, all the general operating expense accounts show increases due to larger traffic, the dismantling of old rolling stock, and outlays for the maintenance of your property, including a charge of $230,810.28 for abandoned line and the replacement of bridges and other structures.

The operating ratio increased 1.02 per cent., being 66.07 per cent., against 65.05 per cent. last year.

The percentage of each group of operating expenses to gross earnings for the past three years, is as follows:

| | 1910. | 1909. | 1908. |
|---|---|---|---|
| Maintenance of way | 13.65 | 10.72 | 12.71 |
| Maintenance of equipment | 20.78 | 21.45 | 23.01 |
| Traffic | 1.35 | 1.41 | 1.28 |
| Transportation | 28.55 | 29.22 | 32.39 |
| General | 1.74 | 2.25 | 2.10 |
| Total | 66.07 | 65.05 | 71.49 |

The physical condition of your property has not only been fully maintained during the year, but greatly improved, and the road is in condition to handle traffic with greater efficiency than at any previous time.

The average cost per ton per mile is 3 mills, being .04 of a mill more than last year.

The average number of revenue tons carried one mile per revenue freight train-mile, excluding the mileage of helping engines, increased 40.42 tons, being 637.56 tons, against 597.14 tons a year ago.

The average number of revenue tons carried one mile per revenue freight engine-mile, including the mileage of helping engines, increased 20 tons, being 420, against 400 a year ago.

The averages for the past ten years are as follows:

| Year. | Train load. | Engine load. | Year. | Train load. | Engine load. |
|---|---|---|---|---|---|
| 1901 | 406 | 345 | 1906 | 525 | 418 |
| 1902 | 424 | 353 | 1907 | 543 | 435 |
| 1903 | 441 | 364 | 1908* | 530 | 371 |
| 1904 | 439 | 357 | 1909* | 597 | 400 |
| 1905 | 507 | 374 | 1910* | 638 | 420 |

*The figures from 1908 to date are based on the Interstate Commerce Commission's classification of locomotive and train mileage.

## COMPARATIVE GENERAL BALANCE SHEET.

### ASSETS.

| | June 30, 1910. | June 30, 1909. |
|---|---|---|
| **Property Investment.** | | |
| **Road and Equipment:** | | |
| Investment to June 30, 1907: | | |
| Road | $23,678,368.84 | $23,678,368.84 |
| Equipment | 10,893,995.46 | 10,893,995.46 |
| | $34,572,364.30 | $34,572,364.30 |
| Investment since June 30, 1907: | | |
| Road | $2,436,974.98 | $1,530,478.70 |
| Equipment | 4,179,660.93 | 1,979,504.25 |
| | $6,616,635.91 | $3,509,982.95 |
| | $41,189,000.21 | $38,082,347.25 |
| Credit—Reserve for Accrued Depreciation: | | |
| Road | $5,567.61 | ..... |
| Equipment | 936,939.39 | 171,314.02 |
| | $942,507.00 | $171,314.02 |
| Other Investments—Miscellaneous: | $40,246,493.21 | $37,911,033.23 |
| Securities—pledged: | | |
| Stocks—Ontario Car Ferry Co., Ltd. | $179,007.54 | $179,007.54 |
| Securities—unpledged: | | |
| Stocks—Avonmore and Northern R.R. | 10,000.00 | 10,000.00 |
| | $189,007.54 | $189,007.54 |
| **Working Assets.** | | |
| Cash | $2,657,335.58 | $2,082,918.90 |
| Securities issued or assumed—Held in Treasury: | | |
| Funded debt— | | |
| Income Mortgage Bonds, R. & P. R.R. | ..... | 1,000.00 |
| Con. Mortgage Bonds, B., R. & P. Ry. | 709,000.00 | ..... |
| Marketable Securities: | | |
| Funded debt—First Mortgage, Punxsutawney Coal Mining Co. | 5,422.79 | 12,922.79 |
| Loans and bills receivable | 465.00 | ..... |
| Traffic and car service balances due from other companies | 34,864.02 | 32,212.26 |
| Net balance due from agents & conductors | 816,036.53 | 637,373.01 |
| Miscellaneous accounts receivable | 262,389.01 | 194,861.68 |
| Materials and supplies | 1,194,859.38 | 690,785.17 |
| Other working assets | 106,180.75 | 96,871.41 |
| | $5,786,583.06 | $3,748,945.22 |
| **Deferred Debit Items.** | | |
| Advances: Temporary advances to Proprietary, Affiliated and Controlled Companies: | | |
| Clearfield & Mahoning Ry. Co. | $80,614.26 | ..... |
| Allegheny & Western Ry. Co. | 67,629.72 | ..... |
| Working funds | 641.50 | ..... |
| | $148,885.48 | $159,436.75 |
| Rents and insurance paid in advance | 20,603.78 | 21,085.08 |
| Special deposits | 159,450.00 | ..... |
| Cash and securities: | | |
| In sinking and redemption funds | 75,852.53 | 2,402,550.23 |
| In insurance and other reserve funds | 192,775.12 | 163,923.19 |
| In provident funds | 145,949.70 | 129,236.38 |
| Other deferred debit items | 45,862.74 | 16,655.50 |
| | $789,379.35 | $2,892,887.13 |
| | $47,011,433.16 | $44,741,873.12 |

### LIABILITIES.

| | June 30, 1910. | June 30, 1909. |
|---|---|---|
| **Stock.** | | |
| Capital Stock—Common | $10,500,000.00 | $10,500,000.00 |
| Preferred | 6,000,000.00 | 6,000,000.00 |
| | $16,500,000.00 | $16,500,000.00 |
| **Mortgage, Bonded and Secured Debt.** | | |
| Funded debt—In hands of the Public: | | |
| Mortgage Bonds— | | |
| First Mortgage Bonds, R. & P. R.R. | $1,300,000.00 | $1,300,000.00 |
| Con. Mortgage Bonds, R. & P. R.R. | 3,920,000.00 | 3,917,000.00 |
| General Mort. Bonds, B., R. & P. Ry. | 4,427,000.00 | 4,427,000.00 |
| Con. Mort. Bonds, B., R. & P. Ry. | 6,012,000.00 | 4,735,000.00 |
| First Mortgage Bonds, L., P. & C. R.R | 350,000.00 | 350,000.00 |
| Plain bonds, debentures and notes— | | |
| Construction and improvement bonds. | ..... | 360,000,00 |
| Income bonds— | | |
| Income Mortgage Bonds, R. & P. R.R. | ..... | 5,000.00 |
| Equipment trust obligations | 8,830,000.00 | 7,693,000.00 |
| Miscellaneous—Real estate mortgage | 60,000.00 | 60,000.00 |
| | $24,899,000.00 | $22,847,000.00 |
| Held in Treasury: Mortgage Bonds— | | |
| Con. Mortgage Bonds, R. & P. R.R. | ..... | $3,000.00 |
| Con. Mortgage Bonds, B., R. & P. Ry. | $709,000.00 | ..... |
| Income Bonds— | | |
| Income Mortgage Bonds, R. & P. R.R. | ..... | 1,865,000.00 |
| | $25,608,000.00 | $24,715,000.00 |
| **Working Liabilities.** | | |
| Loans and bills payable | $159,450.00 | ..... |
| Traffic and car service balances due to other companies | 105,969.97 | $67,933.24 |
| Audited vouchers and wages unpaid | 912,986.29 | 564,762.93 |
| Miscellaneous accounts payable | 11,887.02 | 11,548.32 |
| Matured interest, dividends & rents unpaid | 34,307.50 | 37,455.00 |
| Other working liabilities | 61,625.60 | 63,107.14 |
| | $1,286,266.38 | $744,806.63 |
| **Accrued Liabilities not Due.** | | |
| Unmatured interest, dividends and rents payable | $274,084.40 | $260,316.40 |
| Taxes accrued | 38,237.10 | 25,777.44 |
| | $312,321.50 | $286,093.84 |
| **Deferred Credit Items.** | | |
| Operating reserves | $195,595.85 | $167,442.45 |
| Liability on account of provident funds | 145,949.70 | 129,236.38 |
| Other deferred credit items | 26,028.93 | 21,940.26 |
| | $367,574.48 | $318,619.09 |
| **Appropriated Surplus.** | | |
| Additions to property since June 30, 1907, through income | $190,000.00 | ..... |
| Reserved from Income or Surplus—for Equipment | 125,000.00 | ..... |
| | $315,000.00 | ..... |
| Profit and Loss—Balance | $2,622,310.80 | $2,177,353.56 |
| | $47,011,433.16 | $44,741,873.12 |

Note.—The figures for the fiscal year 1909 were recast to conform to the form of General Balance Sheet statement prescribed by the Interstate Commerce Commission, effective June 15th, 1910.

The average number of revenue passengers carried one mile per revenue passenger train-mile is 40, being 1 less than in the preceding year.

The non-revenue traffic, not included in any of the other figures of this report, is as follows:

| | 1910. | 1909. |
|---|---|---|
| Number of passengers | 244,563 | 202,097 |
| " " passengers carried 1 mile. | 9,640,295 | 8,210,231 |
| " " tons | 966,968 | 720,367 |
| " " tons carried 1 mile | 75,856,798 | 53,541,588 |

### CLEARFIELD AND MAHONING RAILWAY.

This Company, at a meeting held July 20th, 1909, authorized an increase of its capital stock from $750,000 to $1,000,000, to pay for improvements to more economically handle traffic from the main line and from the Lake Shore & Michigan Southern Railway to whom trackage rights were granted.

Of the new stock authorized, $150,000 was sold, and the proceeds applied towards the repayment of $294,364.26 advanced by your Company for additions and improvements, leaving a balance of $80,614.26 to be provided for out of the remaining $100,000 of stock authorized.

At a meeting held on November 15th, 1909, you authorized the guarantee of dividends at the rate of 6 per cent. per annum on the new stock. By the issue of $150,000 of stock, the annual rental of this Company is increased from $77,500 to $86,500.

### FIRE INSURANCE FUND.

The assets in this fund were increased $28,851.93 during the year, and now amount to $192,775.12 in interest-bearing securities and cash.

### PENSION FUND.

The assets in this fund, created July 1, 1903, were increased $16,713.32 during the year, and now amount to $145,949.70 in interest-bearing securities and cash.

There were 33 pensioners upon the roll on June 30, 1910, an increase of two during the year.

### GENERAL REMARKS.

The Josephine Furnace and Coke Company has commenced building a second blast furnace at Josephine, Pa., which will materially increase the revenue tonnage of your line.

The Ontario Car Ferry Company, Limited, paid a dividend of 5 per cent. for the year ending December 31, 1909. The sum of $12,485 received on the $249,700 of this Company's stock was credited to "Other Income" Account.

Under date of October 1, 1909, an agreement was entered into with the Lake Shore & Michigan Southern Railway Company, as lessee of the Jamestown, Franklin & Clearfield Railroad Company, by which trackage rights were granted over your line from Falls Creek, Pa., to Clearfield, Pa., a distance of 30.65 miles.

By the terms of this agreement, your Company is to receive $42,000 annually, a sum equivalent to the interest at the rate of 4 per cent. per annum on one-half the estimated value of the line over which trackage is granted. The agreement also provides for increased compensation at the same rate on one-half of the cost of further improvements made by mutual consent when necessary to accommodate traffic. The Lake Shore & Michigan Southern Railway Company is also to pay its proportion of maintenance and operation over the line used.

The agreement extends over a period of twenty-five years, and is to continue thereafter until canceled by two years' notice from either party. Trains began moving under this agreement on September 26th, 1909.

Mr. Harry Yates was, on November 15, 1909, elected a Director to fill the vacancy in the Board caused by the death of his father, Mr. Arthur G. Yates.

The acknowledgments of the Board are renewed to the officers and employees for their faithful and efficient services.

By order of the Board,

ADRIAN ISELIN, Jr., President.

New York, August 2, 1910.

### CONDENSED OPERATING REVENUES AND OPERATING EXPENSES.

| OPERATING REVENUES: | Per cent. | 1910. | 1909. | Per cent. |
|---|---|---|---|---|
| Freight | 84.63 | $7,562,359.28 | $6,001,572.03 | 83.68 |
| Passenger | 11.04 | 986,369.73 | 887,625.37 | 12.38 |
| Other transportation | 2.65 | 237,009.70 | 182,595.24 | 2.55 |
| Other operations | 1.68 | 150,478.25 | 100,104.21 | 1.39 |
| Total oprtg. revenues | 100.00 | $8,936,116.96 | $7,171,896.85 | 100.00 |
| OPERATING EXPENSES: | Per cent. of earnings. | 1910. | 1909. | Per cent. of earnings. |
| Maintenance of way | 13.65 | $1,220,190.46 | $769,037.39 | 10.72 |
| Maint. of equipment | 20.78 | 1,857,016.59 | 1,538,190.93 | 21.45 |
| Traffic expenses | 1.35 | 120,168.82 | 101,258.68 | 1.41 |
| Transportat'n expenses. | 28.55 | 2,551,197.46 | 2,095,212.30 | 29.22 |
| General expenses | 1.74 | 155,331.60 | 161,471.63 | 2.25 |
| Total operating exp. | 66.07 | $5,903,904.93 | $4,665,170.93 | 65.05 |
| NET OPERATING REVENUE. | 33.93 | 3,032,212.03 | 2,506,725.92 | 34.95 |
| | 100.00 | | | 100.00 |

## BROOKLYN RAPID TRANSIT: REPORT OF THE DIRECTORS FOR THE YEAR ENDING JUNE 30, 1910.

85 CLINTON STREET, BROOKLYN, N. Y., August 22, 1910.

COMPARATIVE STATEMENT OF THE RESULTS OF THE OPERATIONS OF THE BROOKLYN RAPID TRANSIT SYSTEM FOR YEARS ENDING JUNE 30, 1910-1909.

| | 1910. | 1909. | Increase or Decrease. |
|---|---|---|---|
| Gross Earnings from Operation | $20,906,929.80 | $19,694,462.11 | +$1,212,467.69 |
| Operating Expenses | 11,726,392.20 | 11,394,654.66 | + 331,737.54 |
| Net Earnings from Operation | $9,180,537.60 | $8,299,807.45 | + $880,730.15 |
| Income from Other Sources | 539,427.31 | 605,817.21 | — 66,389.90 |
| Total Income | $9,719,964.91 | $8,905,624.66 | + $814,340.25 |
| Less Taxes and Fixed Charges. | 7,108,369.62 | 6,969,015.59 | + 139,354.03 |
| Net Income | $2,611,595.29 | $1,936,609.07 | + $674,986.22 |
| Out of which was taken for Betterments and Additions to Property | 108,560.19 | 65,429.82 | + 43,130.37 |
| Surplus from Operation for the Year | $2,503,035.10 | $1,871,179.25 | + $631,855.85 |
| Profit from Real Estate disposed of | 69,184.65 | ..... | + 69,184.65 |
| Total Surplus for Year | $2,572,219.75 | $1,871,179.25 | + $701,040.50 |
| Surplus at June 30, 1909-1908 | 4,387,229.84 | 3,853,459.90 | + 533,769.94 |
| Surplus June 30, 1910, and June 30, 1909 | $6,959,449.59 | $5,724,639.15 | +$1,234,810.44 |
| Of this amount there has been appropriated: | | | |
| For Discounts on Bonds Sold | ..... | 89,575.00 | — 89,575.00 |
| Old accounts written off | 636.43 | 8,727.53 | — 8,091.10 |
| Additional reserve for Special Franchise Taxes in litigation | 232,917.34 | 238,457.25 | — 5,539.91 |
| Expenses of prior years adjusted | 13,281.17 | 20,197.24 | — 6,916.07 |
| Supercession losses, etc | 25,292.73 | 83,376.29 | — 58,083.56 |
| Dividend on B. R. T. Stock outstanding | 1,906,286.50 | 897,076.00 | + 1,009,210.50 |
| Total Appropriations | $2,178,414.17 | $1,337,409.31 | + $841,004.86 |
| Balance Surplus June 30, 1910 and June 30, 1909 | $4,781,035.42 | $4,387,229.84 | + $393,805.58 |

Gross Earnings of the System from Operation for 12 months ending June 30, 1910, were $20,906,929.80, an increase of $1,212,467.69 over last preceding year.

Net Earnings from Operation were $9,180,537.60 and Net Surplus after all charges $2,503,035.10, showing an increase respectively of $880,730.15 and $631,855.85 over previous year.

Expenditures for Maintenance of Way and Structures increased $115,704.43. The increase is chiefly due to quite extensive rebuilding of trolley tracks.

Maintenance of Equipment shows an increase of $377,354.64. The unit cost of shop work was materially less than in 1909; the increase lies mainly in cost of changing air brake equipment on elevated cars, and the substitution of steel for iron wheels, together with over $100,000 charged off and carried in accrued amortization of capital.

The increase of over $200,000 in Operation of Cars is largely accounted for by advance in wage scale.

There was a decrease of $207,858.12 in the combined items of Damages and Legal Expenses. The cost of Damage settlements and judgments amounted to 2.66 per cent., and Legal and Claim Department Expenses 1.43 per cent. of Gross Earnings from Operation. There was a further reduction in number of suits brought, and, barring slightly over $25,000 in judgments on appeal, there is no outstanding judgment against any Company in the System.

Passengers carried, 569,438,773, against 530,149,957 last year. Of the number carried this year 151,279,806 rode on transfers.

Compared with last year there was a decrease of 6/10 of a mill in the average gross receipt per passenger and 9/10 of a mill in operating charges. Taxes increased 1/10 of a mill, Interest and Rentals decreased 7/10 of a mill, making a total reduction of 1.5 mills in cost per passenger, and increase in surplus of 9/10 of a mill, or 25.7 per cent. per passenger carried.

Passenger Revenue Car-Mileage of the System shows an increase over the preceding year of 3,784,215 miles. The average number of passengers per car-mile was 7.30 against 7.14 last year.

The total Power House output measured at the switchboard was 326,894,950 K.W.H. Average cost of Power House Operation including power house and sub-station repairs was 0.567 cents per K.W.H. Although the output was nearly 16,000,000 K.W.H. in excess of last year the cost of Operation of Power Plant was $98,000 less. In the four years ending June 30 there has been a reduction of slightly above 20 per cent. in unit cost of power at the switchboard. A lower consumption of power per car-mile through improvement of appliances and better methods of operation has contributed to favorable results in this department of the service.

### PENSIONS.

A Pension System was inaugurated on January 1, 1910, the affairs of which are administered by a Board of Pensions consisting of the Vice-President and General Manager, the Secretary and Treasurer of the Brooklyn Rapid Transit System and the President of the Brooklyn Rapid Transit Employees' Benefit Association. The amount of pension is based upon the average monthly wage received by the pensioner during the ten years immediately preceding retirement and graduated from a minimum of 30 to a maximum of 50 per cent. of this rate, according to length of service. At the end of the first six months, twenty-six employees had qualified and were receiving pension allowances.

### INSURANCE RESERVE FUND.

In addition to $51,428.27 Insurance Reserve Fund accumulated prior to the agreement entered into on November 15, 1907, by the Companies composing the System there has been earned $183,897.26, making a total to credit of the Reserve Fund of $235,325.53. The balance sheet reflects but $180,979.87, for the reason that the difference, $54,345.66, while earned, is not distributable until the close of the insurance year, November, 1910. There has been invested by the Trustees in interest bearing securities $190,243.75, representing a par value of $201,000, yielding an income of $8,895 per annum

The suits brought by the Brooklyn Union Gas Company in 1905 against several constituent companies on account of damages claimed to have been suffered from electrolysis of pipes were disposed of by compromise and all Companies in the System released from liability on this account. It is believed by all concerned that the negative return system now in use is an effective safeguard against further trouble from this source.

No important construction work was undertaken during the year.

The extension of the Nostrand Avenue line from the crossing at Flatbush Avenue was commenced and 1.572 miles of single track laid, and in the extension of the Utica Avenue line between Church Avenue and Avenue "N" there has been laid 3.228 miles of single track.

Montague Street line, heretofore operated by cable, was electrified and track connections made at Montague and Court Streets enabling the discontinuance of cable operation between Wall Street Ferry and Court Street and the installation of through electric service between Wall Street Ferry and Fulton Ferry. The cable power station was closed.

Trolley surface tracks were improved by the laying of 52,312 square yards of first class pavements covering 5.778 miles of city streets.

Forty-three pieces of special work were renewed and 20 pieces of new special work and 15 electric switches were installed.

The grade crossings of the Long Island Railroad Company at Emmons Avenue in Sheepshead Bay and at the intersection of Liberty and Atlantic Avenues were eliminated by changes of grade.

Upward of eight miles of single track originally constructed with light girder rail on wooden ties and sand foundation were relaid with 102-pound 7-inch girder rail, 4.9 miles on steel and 3.1 miles on wood ties, all on concrete foundation with granite pavement.

Thirteen thousand five hundred feet of elevated structure was reinforced, making a total of 61,000 feet of structure reinforced to June 30, 1910.

The rights of way of the Prospect Park & Coney Island Railroad, between Ninth Avenue and Kensington Junction, and the Sea Beach Railway, between 62d and 86th Streets, were fenced.

Ten stations on the Fulton Street line were renovated and repainted.

Two new stations were established, to wit: Bay 50th Street, on the West End Division, and Fifteenth Avenue, on the Prospect Park & Coney Island Line.

A new freight house and yard were constructed at the Sea Beach Terminal, Coney Island, and rented property abandoned.

One 55-ton electric locomotive for the handling of freight service on private rights of way was contracted for.

Two thousand six hundred and seventy-nine surface and 828 elevated cars were put through the shops for overhauling, repainting and varnishing.

Wheelguards for 2,563 surface cars have been ordered in conformity with the requirements of the Public Service Commission, and will be installed during the current year.

The air brake equipment of 960 elevated cars has been replaced by the latest type of automatic quick action brakes.

The generating capacity of the power plant was increased by the installation of two 10,000 K.W. units in the Williamsburg station. The total Power House capacity is 115,780 K.W., of which 103,500 K.W. represents power stations in active use.

The Prospect Park, Bridge and 38th Street sub-stations have each been increased by 2,000 K.W. capacity.

There are now 19 sub-stations with a total rated capacity of 85,500 K.W.

A total of 0.29 mile of underground conduit, equivalent to 1.72 miles of single duct, was constructed.

12.42 miles of high tension transmission cables were installed in subway conduits during the year.

18.26 miles of overhead feeders were removed and 119.67 miles of trolley wire renewed.

### REFUNDING BONDS.

To June 30, 1910, there had been authenticated and delivered to the Company by the Central Trust Company of New York, Trustee, under the First Refunding Gold Mortgage, dated July 1, 1902, 4 per cent. bonds of a par value of $48,296,000. This was an increase, during the fiscal year, of $1,525,000, of which $795,000 were issued for Certificates of Indebtedness of constituent companies and $730,000 in exchange for a like amount of First Consolidated Mortgage Bonds of the Nassau Electric Railroad Company.

The Certificates of Indebtedness were issued at par and represent the actual cost of additions and improvements by constituent companies, while the bonds exchanged were issued in connection with the retirement of $730,000 First Consolidated Mortgage Bonds of the Atlantic Avenue Railroad Company.

Of the $48,296,000 bonds authenticated and delivered to June 30, 1909, $33,078,000, par value, have been sold for cash, realizing $20,676,295.93, and $1,709,000, par value, exchanged for stocks and bonds of constituent companies.

| | | |
|---|---|---|
| On July 1, 1909, there were Brooklyn Rapid Transit Gold Mortgage 4 per cent. bonds in the treasuries of all companies | $13,693,000 | par value |
| Authenticated and delivered, during the fiscal year ended June 30, 1910 | 1,525,000 | " |
| Total on hand June 30, 1910 | $15,218,000 | par value |

Of these the Brooklyn Rapid Transit Company owns $13,509,000 par value, and the Nassau Electric Railroad Company $1,709,000, par value.

In addition, the Company has expended to June 30, 1909, $761,928.40 for which bonds may be issued.

Complete exhibit of issue and disposition of the First Refunding Gold Mortgage Bonds outstanding at June 30, 1910, is given below:

| | |
|---|---|
| Received from Trustee upon execution of Mortgage | $5,000,000.00 |
| Authenticated from time to time upon deposit with Trustee of Securities and Certificates of Indebtedness of Constituent Companies to the extent of actual cost of improvements. | 43,296,000.00 |
| Total authenticated by Trustee | $48,296,000.00 |
| Held in Treasury of B. R. T. Co | 13,509,000.00 |
| Amount outstanding | $34,787,000.00 |
| Proceeds realized from Sale and Exchange for Underlying Bonds | 28,385,295.93 |
| Discount (absorbed as indicated below) | $6,401,704.07 |

### BOND DISCOUNT DISPOSITION.

| Year. | | |
|---|---|---|
| 1903—Charged to Cost of Securities | | $1,000,000.00 |
| 1904—Charged to Surplus | | 1,153,200.00 |
| 1905— " " " | | 1,746,800.00 |
| 1906— " " " | | 583,130.41 |
| 1907— " " " | | 371,825.24 |
| 1908— " " " | | 1,457,173.42 |
| 1909— " " " | | 89,575.00 |
| | | $6,401,704.07 |

Appended hereto may be found statements, relating to the business of the fiscal year, and the condition of the Company's affairs on June 30, 1910.

EDWIN W. WINTER, President.

BROOKLYN RAPID TRANSIT CO.,
85 Clinton Street,
Brooklyn, N. Y.

### COMPARATIVE SUMMARY OF OPERATIONS, FOR YEAR ENDING JUNE 30, 1910-1909.

| GROSS EARNINGS. | 1910. | 1909. | Inc. + or Dec. — | Per Cent. |
|---|---|---|---|---|
| Passenger | $20,477,144.74 | $19,058,693.14 | +$1,418,451.60 | 7.44 |
| Freight, Mail & Express | 272,140.08 | 254,642.81 | + 17,497.27 | 6.87 |
| Advertising | 157,644.98 | 155,860.31 | + 1,784.67 | 1.14 |
| Am. Ry. Traffic Co. | ..... | 225,265.85 | — 225,265.85 | .... |
| Total Earnings from Operation | $20,906,929.80 | $19,694,462.11 | +$1,212,467.69 | 6.16 |
| OPERATING EXPENSES. | | | | |
| Maintenance of Way and Structure | $1,309,718.56 | $1,194,014.13 | + 115,704.43 | 9.69 |
| Maintenance of Equipment | 2,068,270.97 | 1,690,916.33 | + 377,354.64 | 22.32 |
| Operation of Power Plant | 1,498,712.04 | 1,596,759.17 | — 98,047.13 | 6.14 |
| Operation of Cars | 5,061,150.43 | 4,812,555.95 | + 248,594.48 | 5.17 |
| Damages and Legal Expenses | 921,538.19 | 1,129,396.31 | — 207,858.12 | 18.40 |
| General Expenses | 689,521.75 | 676,665.93 | + 12,855.82 | 1.90 |
| Freight, Mail and Express Expenses | 174,288.46 | 138,644.45 | + 35,644.01 | 25.71 |
| American Railway Traffic Co. Expenses | 3,191.80 | 155,702.39 | — 152,510.59 | 97.95 |
| Total Operating Expenses | $11,726,392.20 | $11,394,654.66 | + $331,737.54 | 2.91 |
| Net Earnings from Operation | $9,180,537.60 | $8,299,807.45 | + $880,730.15 | 10.61 |
| INCOME FROM OTHER SOURCES. | | | | |
| Rent of Land & Bldgs. | $69,087.41 | 74,948.65 | — 5,861.24 | 7.82 |
| Rent of Tracks and Structure | 103,369.82 | 104,997.11 | — 1,627.29 | 1.55 |
| Miscellaneous | 366,970.08 | 425,871.45 | — 58,901.37 | 13.83 |
| Total Income | $9,719,964.91 | $8,905,624.66 | + 814,340.25 | 9.14 |
| DEDUCTIONS. | | | | |
| Taxes | $1,454,213.16 | $1,337,620.14 | + 116,593.02 | 8.72 |
| Interest & Rentals (net) | 5,654,156.46 | 5,631,395.45 | + 22,761.01 | .40 |
| Total Deductions | 7,108,369.62 | 6,969,015.59 | + 139,354.03 | 2.00 |
| Net Income | 2,611,595.29 | 1,936,609.07 | + 674,986.22 | 34.85 |
| Special Appropriations. | 108,560.19 | 65,429.82 | + 43,130.37 | 65.92 |
| Surplus | $2,503,035.10 | $1,871,179.25 | + $631,855.85 | 33.77 |

## COMPARATIVE CONSOLIDATED GENERAL BALANCE SHEET.

| Assets. | June 30, 1910. | June 30, 1909. | Increase +. Decrease —. | |
|---|---|---|---|---|
| Cost of Road and Equipment (Properties owned in whole or in part by B. R. T. Co.) | $124,081,041.26 | $123,224,564.22 | ..... + | $856,477.04 |
| Advances Account of Construction for | | | | |
| Leased Companies | 11,080,217.71 | 10,900,769.27 | ..... + | 179,448.44 |
| The Brooklyn City Railroad Co. | $9,552,275.58 | $9,399,121.42 | + | $153,154.16 |
| Prospect Park & Coney Island R.R. Co. | 1,527,942.13 | 1,501,647.85 | + | 26,294.28 |
| Construction Expenditures Constituent Companies (To be reimbursed by issuance of B. R. T. 1st Refunding Gold Mortgage 4 per cent. Bonds upon deposit with Central Trust Co., Trustee, of Certificates of Indebtedness to cover.) | 761,928.40 | 966,642.66 | ..... — | 204,714.26 |
| Guaranty Fund (Securities and Cash) | 3,904,920.00 | 3,754,920.00 | ..... + | 150,000.00 |
| Underlying Bonds Deposited with Central Trust Co., Trustee | 1,709,000.00 | 979,000.00 | ..... + | 730,000.00 |
| Treasury Bonds | 15,281,500.00 | 13,781,500.00 | ..... + | 1,500,000.00 |
| B. R. T. Co.'s 1st Ref. Gold Mortgage 4% | 15,203,000.00 | 13,678,000.00 | +1,525,000.00 | ..... |
| Other Issues | 78,500.00 | 103,500.00 | — 25,000.00 | ..... |
| Treasury Stock | 146,228.00 | 146,228.00 | | |
| Current Assets | 3,151,835.16 | 3,224,767.51 | ..... — | 72,932.35 |
| Cash on hand | 1,229,260.68 | 1,526,576.07 | — 297,315.39 | ..... |
| Due from Companies and Individuals | 710,265.01 | 590,653.96 | + 119,611.05 | ..... |
| Construction Material and General Supplies on hand | 920,311.55 | 833,339.25 | + 86,972.30 | ..... |
| Real Estate Mortgages | 67,500.00 | 22,500.00 | + 45,000.00 | ..... |
| Prepaid Accounts | 111,833.72 | 139,034.03 | — 27,200.31 | ..... |
| Harway Improvement Co. Stock | 112,664.20 | 112,664.20 | | |
| Bonds in Escrow (and Cash in 1909) | 67,000.00 | 57,120.00 | ..... + | 9,880.00 |
| Trustees, B. R. T. Insurance Reserve Fund | 129,551.60 | 57,070.16 | ..... + | 72,481.44 |
| Accounts to be Adjusted | 99,965.36 | 40,691.64 | ..... + | 59,273.72 |
| | $160,413,187.49 | $157,133,273.46 | ..... + | $3,279,914.03 |

| Liabilities. | June 30, 1910. | June 30, 1909. | Increase +. Decrease —. | |
|---|---|---|---|---|
| Capital Stock | $45,842,608.98 | $45,835,908.98 | ..... + | $6,700.00 |
| Brooklyn Rapid Transit Co. | 45,000,000.00 | 45,000,000.00 | | |
| Outstanding Capital Stock of Constituent Companies | 842,608.98 | 835,908.28 | + 6,700.00 | ..... |
| Funded Debt and Real Estate Mortgages | 101,116,680.00 | 99,624,680.00 | ..... + | 1,492,000.00 |
| Brooklyn Rapid Transit Co. | 55,296,000.00 | 53,771,000.00 | +1,525,000.00 | ..... |
| Bonded Debt of Constituent Companies: | | | | |
| The Brooklyn Heights R.R. Co. | 250,000.00 | 250,000.00 | | |
| The Nassau Electric R.R. Co. | 15,000,040.00 | 15,000,040.00 | | |
| Brooklyn Queens Co. & Sub. R.R. Co. | 6,624,000.00 | 6,624,000.00 | | |
| Brooklyn Union Elevated R.R. Co. | 23,000,000.00 | 23,000,000.00 | | |
| Sea Beach Railway Co. | 650,000.00 | 650,000.00 | | |
| Real Estate Mortgages | 296,640.00 | 329,640.00 | — 33,000.00 | ..... |
| Current Liabilities | 8,043,917.80 | 6,948,312.49 | ..... + | 1,095,605.31 |
| Audited Vouchers | 1,095,606.01 | 1,161,826.46 | — 66,220.45 | ..... |
| Due Companies and Individuals | 119,294.48 | 171,230.79 | — 51,936.31 | ..... |
| Taxes Accrued and not Due | 1,667,649.06 | 1,570,172.15 | + 97,476.91 | ..... |
| Interest and Rentals Accrued and not Due | 661,368.25 | 645,083.09 | + 16,285.16 | ..... |
| Bills Payable | 4,500,000.00 | 3,400,000.00 | +1,100,000.00 | ..... |
| Contractors' Deposits | 52,000.00 | 42,120.00 | ..... + | 9,880.00 |
| Long Island Traction Co. Trust Fund | 9,260.15 | 9,280.15 | ..... — | 20.00 |
| Accounts to be Adjusted | 81,731.90 | 34,145.49 | ..... + | 47,586.41 |
| Insurance Reserve Fund | 180,979.87 | 108,498.42 | ..... + | 72,481.44 |
| Contingent Reserve Fund | 108,520.93 | 143,098.08 | ..... — | 34,577.15 |
| Accrued Amortization of Capital | 196,452.44 | ..... | ..... + | 196,452.44 |
| Surplus | 4,781,035.42 | 4,387,229.84 | ..... + | 393,805.58 |
| | $160,413,187.49 | $157,133,273.46 | ..... + | $3,279,914.03 |

NOTE.—The Certificates of Indebtedness issued by Constituent Companies, aggregating $38,314,594.18, *against which B. R. T. Bonds have been issued,* do not appear separately on this Consolidated Balance Sheet, as the property purchased appears as an asset under the head of "Cost of Road and Equipment," and "Advances Account of Construction for Leased Companies," and the liability is represented by the Bonds of the Brooklyn Rapid Transit Company, issued from time to time as such Certificates of Indebtedness are acquired and deposited with the Central Trust Co., Trustee.

COMPARATIVE STATISTICS FOR THE FISCAL YEARS ENDING JUNE 30, 1902-10, BOTH INCLUSIVE.

| Passenger earnings: | 1910. | 1909. | 1908. | 1907. | 1906. | 1905. | 1904. | 1903. | 1902. |
|---|---|---|---|---|---|---|---|---|---|
| Surface Division | $12,346,325 | $11,645,569 | $11,543,992 | $11,323,084 | $11,531,125 | $10,345,112 | $9,757,629 | $9,284,157 | $9,049,229 |
| Elevated Division | 8,130,820 | 7,413,124 | 7,386,172 | 7,120,899 | 6,055,597 | 5,304,289 | 4,671,917 | 3,802,683 | 3,272,036 |
| Total Passenger Earnings | $20,477,145 | $19,058,693 | $18,930,164 | $18,443,983 | $17,586,722 | $15,649,401 | $14,429,546 | $13,086,840 | $12,321,265 |
| Freight, Mail and Express, etc. | 429,785 | 635,769 | 940,403 | 937,604 | 886,606 | 684,044 | 309,163 | 193,481 | 189,357 |
| Other Earnings | 539,427 | 605,817 | 677,824 | 555,166 | 323,935 | 252,135 | 211,853 | 277,493 | 252,046 |
| Total Earnings | $21,446,357 | $20,300,279 | $20,548,391 | $19,936,753 | $18,797,263 | $16,585,580 | $14,950,562 | $13,557,814 | $12,762,668 |
| Operating Charges | 11,834,958 | 11,460,084 | 12,169,360 | 11,907,768 | 11,021,720 | 10,257,155 | 9,144,145 | 8,139,562 | 8,268,325 |
| Net Income | $9,611,404 | $8,840,195 | $8,379,031 | $8,028,985 | $7,775,543 | $6,328,425 | $5,806,417 | $5,418,252 | $4,494,343 |
| Taxes | $1,454,213 | $1,337,620 | $930,008 | $893,783 | $882,862 | $827,951 | $748,258 | $757,788 | $742,817 |
| Interest and Rentals | 5,654,156 | 5,631,396 | 5,604,931 | 5,132,604 | 4,730,072 | 4,350,540 | 4,052,957 | 3,904,068 | 3,732,638 |
| Total Fixed Charges | $7.108,369 | $6,969,016 | $6,534,939 | $6,026,387 | $5,612,934 | $5,178,491 | $4,801,215 | $4,661,856 | $4,475,450 |
| Surplus | $2,503,035 | $1,871,179 | $1,844,092 | $2,002,598 | $2,162,609 | $1,149,934 | $1,005,202 | $750,396 | $18,893 |
| *Units per Passenger.* | | | | | | | | | |
| Passenger Earnings | $20,477,145 | $19,058,693 | $18,930,164 | $18,443,983 | $17,586,722 | $15,649,401 | $14,429,546 | $13,086,840 | $12,321,265 |
| Increase over preceding year | 7.44% | 0.68% | 2.64% | 4.87% | 12.38% | 8.45% | 10.26% | 6.21% | ..... |
| Passengers Carried | 569,438,773 | 530,149,597 | 515,184,967 | 511,839,437 | 452,604,203 | 387,213,469 | 361,701,049 | 338,365,269 | 321,501,524 |
| Increase over preceding year | 7.41% | 2.93% | 0.65% | 13.09% | 16.89% | 7.05% | 6.90% | 5.24% | ..... |
| Transfers Redeemed | 151,279,806 | 141,326,128 | 128,650,863 | 136,240,669 | 96,455,314 | 70,080,877 | 67,198,622 | 69,411,386 | 67,691,915 |
| Increase over preceding year | 7.04% | 9.82% | 5.57% | 41.25% | 37.63% | 4.29% | 3.18% | 2.54% | ..... |
| Revenue Mileage | 77,984,651 | 74,200,436 | 73,674,770 | 68,273,181 | 63,657,323 | 57,599,743 | 54,573,384 | 52,292,501 | 52,684,980 |
| Increase over preceding year | 5.10% | 0.71% | 7.91% | 7.25% | 10.53% | 5.55% | 4.36% | 0.74% | ..... |
| Earnings per Revenue Mile | 26.3 cts. | 25.7 cts. | 25.7 cts. | 27.0 cts. | 27.6 cts. | 27.2 cts. | 26.4 cts. | 25.0 cts. | 23.4 cts. |
| Passenger Earnings | 3.60 cts. | 3.60 cts. | 3.68 cts. | 3.60 cts. | 3.88 cts. | 4.04 cts. | 3.99 cts. | 3.87 cts. | 3.83 cts. |
| Miscellaneous Earnings | .17 " | .23 " | .31 " | .29 " | .27 " | .24 " | .14 " | .14 " | .14 " |
| Total Earnings | 3.77 cts. | 3.83 cts. | 3.99 cts. | 3.89 cts. | 4.15 cts. | 4.28 cts. | 4.13 cts. | 4.01 cts. | 3.97 cts. |
| Operating Charges | 2.08 cts. | 2.17 cts. | 2.36 cts. | 2.33 cts. | 2.43 cts. | 2.65 cts. | 2.53 cts. | 2.41 cts. | 2.57 cts. |
| Taxes | .26 " | .25 " | .18 " | .17 " | .20 " | .21 " | .21 " | .22 " | .23 " |
| Interest and Rentals | .99 " | 1.06 " | 1.09 " | 1.00 " | 1.04 " | 1.12 " | 1.12 " | 1.16 " | 1.16 " |
| Total | 3.33 cts. | 3.48 cts. | 3.63 cts. | 3.50 cts. | 3.67 cts. | 3.98 cts. | 3.86 cts. | 3.79 cts. | 3.96 cts. |
| Surplus | 0.44 cts. | 0.35 cts. | 0.36 cts. | 0.39 cts. | 0.48 cts. | 0.30 cts. | 0.27 cts. | 0.22 cts. | 0.006 cts. |
| *Charges Per Cent., of Operating Expenses.* | | | | | | | | | |
| Repairs and Renewals | 16.16 | 14.65 | 14.39 | 13.66 | 13.30 | 15.13 | 12.35 | 9.85 | 13.81 |
| General Operating | 35.52 | 37.48 | 39.45 | 39.69 | 37.95 | 38.77 | 40.32 | 42.67 | 42.85 |
| Damages | 2.66 | 3.66 | 4.14 | 3.86 | 3.48 | 4.25 | 4.77 | 5.31 | 6.88 |
| Legal Expenses | 1.75 | 2.07 | 2.11 | 1.95 | 1.79 | 1.87 | 1.92 | 1.89 | 1.87 |
| Total Operating | 56.09 | 57.86 | 60.09 | 59.16 | 56.52 | 60.02 | 59.37 | 59.72 | 65.41 |
| Taxes | 6.96 | 6.79 | 4.68 | 4.61 | 4.78 | 5.07 | 5.07 | 5.70 | 5.94 |
| Interest and Rentals (net) | 24.46 | 25.52 | 24.80 | 23.61 | 23.85 | 25.10 | 26.15 | 27.31 | 27,82 |
| Special Appropriations | .52 | .33 | 1.15 | 2.28 | 3.14 | 2.77 | 2.60 | 1.57 | .68 |
| Surplus | 11.97 | 9.50 | 9.28 | 10.34 | 11.71 | 7.04 | 6.81 | 5.70 | .15 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

TAX CHARGES FOR THE FISCAL YEARS ENDING JUNE 30, 1902-10, BOTH INCLUSIVE.

| | 1910. | 1909. | 1908. | 1907. | 1906. | 1905. | 1904. | 1903. | 1902. |
|---|---|---|---|---|---|---|---|---|---|
| Real Estate | $326,916.06 | $307,107.28 | $187,975.66 | $178,744.60 | $178,709.94 | $185,722.39 | $174,987.51 | $146,400.00 | $138,000.00 |
| Special Franchise | 482,355.47 | 464,526.01 | 222,517.50 | 224,980.00 | 215,900.00 | 205,800.00 | 187,800.00 | 187,800.00 | 187,800.00 |
| Tax on Earnings | 238,808.45 | 220,501.05 | 217,866.06 | 214,936.14 | 204,497.39 | 174,592.05 | 160,863.40 | 147,824.26 | 146,443.30 |
| Car License | 26,260.01 | 26,589.95 | 26,051.53 | 25,138.51 | 23,598.32 | 21,935.02 | 22,469.00 | 21 824.32 | 20,773.33 |
| Capital Stock | 55,890.00 | 55,890.00 | 55,870.00 | 53,790.00 | 67,514.96 | 63,613.13 | 36,561.87 | 90,131.20 | 81,600.00 |
| Bridge Licenses | 276,986.23 | 263,005.85 | 219,726.72 | 196,193.19 | 192,641.41 | 176,288.55 | 165,576.53 | 163,808.63 | 168,200.68 |
| Federal Tax | 46,996.94 | | | | | | | | |
| Total | $1,454,213.16 | $1,337,620.14 | $930,007.47 | $893,782.44 | $882,862.02 | $827,951.14 | $748,258.31 | $757,788.41 | $742,817.31 |

CONSTRUCTION EXPENDITURES FOR FISCAL YEARS ENDING JUNE 30, 1902-10, BOTH INCLUSIVE.

| | 1910. | 1909. | 1908. | 1907. | 1906. | 1905. | July 1, 1902 to June 30, 1904. | Total. |
|---|---|---|---|---|---|---|---|---|
| Right of Way | $16,759.71 | $25,302.13 | $25,177.32 | $84,784.72 | $93,459.87 | $166,075.83 | $499,894.99 | $911,454.57 |
| Track and Roadway | 346,540.40 | 492,756.10 | 1,607,618.11 | 1,934,453.57 | 1,286,718.68 | 1,311,451.97 | 809,097.01 | 7,788,635.84 |
| Electric Line | 140,898.79 | 83,180.92 | 529,795.80 | 495,688.36 | 438,467.54 | 384,811.55 | 548,675.15 | 2,621,518.11 |
| Real Estate | 42,396.07 | 29,122.52 | 48,117.30 | 37,367.20 | 134,851.60 | 168,804.64 | 678,422.86 | 1,139,082.19 |
| Buildings and Fixtures | 54,534.67 | 258,498.27 | 465,501.51 | 728,209.56 | 1,111,659.50 | 828,584.84 | 501,660.13 | 3,948,648.48 |
| Power Plant | 413,420.82 | 901,956.78 | 1,948,252.38 | 1,434,318.86 | 1,718,398.38 | 387,948.26 | 2,731,606.02 | 9,535,901.50 |
| Shop Tools and Machinery | 12,390.21 | 15,278.45 | 11,150.35 | 134,623.73 | 106,397.75 | 19,878.50 | 925.00 | 300,643.99 |
| Cars and Electrical Equipment | 145,310.13 | 154,613.03 | 1,821,970.47 | 762,787.39 | 3,460,833.93 | 2,254,050.20 | 4,059,118.11 | 12,658,683.26 |
| Miscellaneous Equipment | 9,026.24 | 4,863.10 | 1,052.65 | 13,166.48 | 46,480.63 | 35,995.39 | 35,130.77 | 145,715.26 |
| Miscellaneous | ..... | 5,286.82 | 18,323.14 | 77,786.17 | 16,867.90 | 39,210.48 | 44,062.40 | 201,536.91 |
| Total | $1,181,277.04 | $1,970,858.12 | $6,476,595.03 | $5,703,186.04 | $8,414,135.78 | $5,596,811.66 | $9,908,592.44 | $39,251,820.11 |